# Technical Reports

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UNITED STATES DEPARTMENT OF COMMERCE

Charles Sawyer, Secretary

OFFICE OF TECHNICAL SERVICES

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# BIBLIOGRAPHY OF
# Technical Reports

March 1950

APPAREL

CLOTHING AS A FACTOR IN HEAT ELIMINATION DURING WORK IN HOT ENVIRONMENTS by H. S. Belding, E. S. Turrell, Sid Robinson and S. M. Horvath. Harvard University. Fatigue Laboratory. n.d. 12p tables Mi $1.75 Ph $2.50. PB 99289
OSRD contract no. OEMcmr-54. Report no. 3. HU FL 3.

CLOTHING FOR LOW TEMPERATURES; EFFECTS OF COLD ON THE BENDS; PRESELECTION OF MEN FOR WORKING IN HOT CLIMATES; EFFECTS OF VARYING PROTEIN INTAKE ON MEN; VITAMIN LESS IN SWEAT, BY WILLIAM H. FORBES. U. S. OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT. COMMITTEE ON MEDICAL RESEARCH. MONTHLY PROGRESS REPORT NO. 11. Mar 1943. 1p Mi $1.25 Ph $1.25. PB 99028
1. Clothing, Cold weather 2. Cold - Physiological effects 3. Aeroembolism 4. Tropical diseases 5. Proteins - Physiological effects 6. Vitamins - Elimination 7. Sweat - Vitamin content 8. Harvard University, Fatigue Laboratory.
Contract no. OEMcmr-54.

COLD AND LOW PRESSURE; DIET; CO; CLOTHING FOR LOW TEMPERATURES; WATER AND SALT REQUIREMENTS IN HIGH TEMPERATURES; AND CO POISONING, BY WILLIAM H. FORBES. U. S. OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT. COMMITTEE ON MEDICAL RESEARCH. MONTHLY PROGRESS REPORTS NO. 6, 7, 8, 9 10. Aug 1942 to Jan 1943. 5p Mi $1.25 Ph $1.25. PB 99249
1.Cold -Physiological effects 2. Pressure, Air - Physiological effects 3. Clothing, Cold weather 4. Clothing, Tropical 5. Diet - Salt deficiency 6. Carbon monoxide - Toxicity.
Contract no. OEMcmr-54.

NOTES ON METHODS USED AT THE FATIGUE LABORATORY TO EVALUATE THE THERMAL INSULATION PROVIDED BY COLD WEATHER CLOTHING, by H. S. Belding, R. C. Darling, S. Robinson, E. S. Turrell and D. R. Griffin. Harvard University. Fatigue Laboratory. Sep 1943. 13p tables Mi $1.75 Ph $2.50. PB 99291
1. Clothing, Cold weather 2. Clothing - Thermal conductivity 3. U. S. Office of Scientific Research and Development. Committee on Medical Research 4. HU FL 19
OSRD contract no. OEMcmr-54. Report no. 19.

PERMEABILITY TO WATER OF SOME STANDARD ARMY FOOTGEAR, by G. E. Folk, R. C. Darling and H. S. Belding. Harvard University. Fatigue Laboratory. Dec 1945. 20p graphs, tables Mi $1.75 Ph $2.50. PB 99294
1. Footgear, Military - Water-proofing 2. U. S. Office of Scientific Research and Development. Committee on Medical Research 3. HU FL 37.
Contract OEMcmr-54. Report 37. Serial no. 158 RS/71-103.

PHYSIOLOGICAL ADAPTATIONS OF MAN TO COLD. COLD WEATHER CLOTHING, PHYSIOLOGICAL TESTS OF THE PROTECTION AFFORDED MEN IN THE EXTREME COLD BY U. S. ARMY ARCTIC CLOTHING AND ELECTRICALLY HEATED FLYING SUITS, BY ARLIE V. BOCK. U. S. OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT. COMMITTEE ON MEDICAL RESEARCH. MONTHLY PROGRESS REPORT NO. 14. Jan 1944. 2p Mi $1.25, Ph $1.25. PB 99036
1. Clothing, Cold weather 2. Clothing, Arctic 3. Cold - Physiological effects 4. Suits, Flying - Electrically heated.
Contract no. OEMcmr-54.

SERVICE TEST OF OVERCOAT, FIELD, OD 7, W/REMOVABLE LINER, by William E. Stringer and Franklin E. Ashburn. U. S. Air Proving Ground, Eglin Air Force Base, Fla. Oct 1949. 29p photos, tables Mi $2.00 Ph $3.75. PB 99425
1. Coats, Field - Linings - Tests 2. APGC Proj 34877-5.

## CHEMICAL AND ALLIED PRODUCTS

### Detergents

BETRIEBSVORSCHRIFT FÜR OKTADECYLENE: BETRIEBSVORSCHRIFT FÜR AMPHOSEITE PASTE. (CORRESPONDENCE AND NOTES ON PRODUCTION OF AMPHO SOAP 18 AND OCTODECYLENE). I. G. Farbenindustrie A. G., Schkopau, Ger. 1939-1942. 116f drawings (Text in German) Mi $4.75 Enl Pr $16.25. PB 96592
1. Amphoseife 18 (Trade name) 2. Octodecylene - Germany 3. Micro BIOS FD 2603/47, Frames 1-116.
Abstract in English.

PHASE STUDIES OF GREASES. SECOND TECHNICAL REPORT, FEB 1, 1948-FEB 1, 1949, BY ROBERT D. VOLD AND OTHERS. UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES, CALIF. DEPT. OF CHEMISTRY. CONTRACT NO. N6-ONR-238-TO-2. Feb 1949. 171p graphs, tables Mi $6.50 Ph $22.50. PB 99490
Discusses retention of liquids by gels of soaps in oil, crystal habits of calcium stearate and calcium stearate hydrate, interpretation of x-ray diffraction patterns of soap-oil systems at 25°C, phase behavior of lithium stearate in cetane, phase state and thermal transitions of metal soaps and commercial greases.

AETHO- UND THIOÄTHER CARBONSÄURE IM VERGLEICH ZU DEN VORLAUF-FETTSÄURE. (IGELIT (P.V.C.) PLASTICIZERS BASED ON ETHER AND THIO-ETHER CARBOXYLIC ACIDS AND THIO-ETHER ALCOHOLS). I. G. Farbenindustrie A. G., Schkopau, Ger. Oct 1943. 47f diagrs, tables (Text in German) Mi $2.50, Ph $7.50. PB 96620

1. Igelit P.C.U. (Trade name) 2. Plasticizers - Germany 3. Acids, Carboxylic - Uses - Germany 4. Alcohols, Sulfonated - Uses - Germany 5. Micro FIAT FD 2311/47, Frames 1-46.

Abstract in English.

FACTORS AFFECTING THE CRAZING OF POLYSTYRENE, by Bryce Maxwell and L. F. Rahm. Princeton University. Plastics Laboratory. May 1949. 29p table Mi $2.00, Ph $3.75. PB 99438

The effect of orientation on the critical crazing strain, the reversibility of crazing and the effect of solvents on the crazing of polystyrene have been investigated. It has been found that when the polymer chains are lined up in the direction of tensil stressing, the critical strain is increased in direct proportion to the amount of orientation. Results are tabulated and the conclusion is drawn that the resulting reduction in critical strain is the result of a plasticizer action by the organic solvents. PU PL TR 14B.

LOW-LOSS, ARC RESISTANT, PAPER LAMINATES, by Robert Lurie and N. Vasileff. Princeton University. Plastics Laboratory. May 1949. 18p graphs Mi $1.75, Ph $2.50 Mimeo: $.50. PB 99220

A thermosetting plastic sheet for high frequency application is discussed. A melamine formaldehyde resin with hexamethylenediamine used. The latter, employed within the limits of 18-30% give a satisfactory product for paper laminates of improved electrical, punching and mechanical properties. Army project 3-99-15-022; Signal Corps project 152B.

PLASTIC DEFORMATION OF THALLIUM HALIDES IN RELATION TO CRYSTAL ORIENTATION, PREPARED BY DR. ALEXANDER SMAKULA AND MYRON W. KLEIN. U. S. ARMY. CORPS OF ENGINEERS, ENGINEER RESEARCH AND DEVELOPMENT LABORATORIES, FORT BELVOIR, VA. PROJECT 8-23-02-002. Jan 1949. 33p photos, diagrs, graph Mi $2.25, Ph $5.00. PB 98892

The plastic deformations of cubic thallium halide crystals, produced under pressure of a cone perpendicular to the crystal surface, are seen as two kinds of surface patterns, with characteristics dependent on the crystal orientation. Characteristics of the patterns are explained by the mechanism of plastic deformation in crystals. Application of the punch patterns to determination of crystal orientation preporatory to processing the crystals into optical elements is explained. ENG EB Proj XR 750. ERDL R1102.

PLASTIC PRODUCTS: MOWILITH D300 LM, A DISPERSION PRODUCT FOR IMPREGNATING AND SEALING FOODSTUFF PACKAGES. I. G. Farbenindustrie A.G., Schkopau, Ger. 1943-1944. 16f (Text in German) Mi $1.75 Enl Pr $3.75. PB 98170

1. Mowilith D300 LM (Trade name) 2. Food - Packaging - Germany 3. Micro BIOS FD 2511/47, Frames 1-15.

Abstract available as PB 98170s. 1p. Mi $1.25 Ph $1.25.

PRESERVATION OF AGRICULTURAL SPECIMENS IN PLASTICS, by G. R. Fessenden. U. S. Bureau of Agricultural and Industrial Chemistry. Jul 1949. 81p photos Available free from the U. S. Dept. of Agriculture, Washington 25, D. C. PB 99659
1. Plants - Collection & Preservation 2. Plastics - Molding, Compression.
U. S. Dept. of Agriculture. Miscellaneous Publication no. 679.

TERMITENFESTIGKEIT VON VINIDUR UND IGELIT WEICHFELIEN. (PLASTIC PRODUCTS, TERMITE-PROOF VINIDUR AND IGELIT PLASTICIZED FOILS). I. G. Farbenindustrie A. G., Schkopau, Ger. Jul 1941. 3f (Text in German) Mi $1.25 Enl Pr $2.50. PB 96616
1. Vinidur (Trade name) 2. Igelit PCU (Trade name) 3. Foils, Laminated - Germany 4. Plastics - Tropical deterioration - Germany 5. Micro BIOS FD 2550/47, Frames 1-2.
Abstract in English.

TEST DATA OF PLASTIC MATERIALS AND PLASTICIZERS FOR IGELIT PCU (P.V.C.). I. G. Farbenindustrie A. G., Schkopau, Ger. Jun 1942. 23f (Text in German) Mi $2.00 Enl Pr $5.00. PB 99184
1. Plastics - Tests - Germany 2. Plasticizers - Tests - Germany 3. Igelit PCU (Trade name) 4. Micro BIOS FD 2300/47, Frames 1-23.
Abstract in English.

TESTS WITH PLASTICIZERS SCHKO 6, SCHKO 7, AND SCHKO 8 IN RELATION TO THEIR SUITABILITY FOR IGAMIDS (PLASTIC MATERIAL). I. G. Farbenindustrie A. G., Schkopau, Ger. 1943. 35f (Text in German) Mi $2.25 Enl Pr $6.25. PB 99183
1. Plasticizers - Tests - Germany 2. Schko 6 (Trade name) 3. Schko 7 (Trade name) 4. Schko 8 (Trade name) 5. Micro BIOS FD 2298/47, Frames 1-33 6. Micro BIOS DOCS 2578/1326.
Abstract in English.

TWO-LAYER LAMINATED FOILS BASED ON POLYVINYL CHLORIDE-POLYISOBUTYLENE. VINIDUR SHEETS COMPOSED OF 45% POLYVINYLCHLORIDE AND 55% CHLORINATED POLYVINYLCHLORIDE. I. G. Farbenindustrie A. G., Schkopau, Ger. 1943-1944. 27f (Text in German) Mi $2.00 Enl Pr $5.00. PB 98167
1. Foils, Laminated - Germany 2. Containers - Linings - Germany 3. Vinadur (Trade name) 4. Micro BIOS FD 2549/47, Frames 1-26.
Abstracts available as PB 98167s. 2p. Mi $1.25, Ph $1.25.

VISIERSCHEIBEN UND PLEXIGLAS (OPTICAL QUALITIES AND METHODS OF PRODUCING PLEXIGLASS) BY SCHMIDBAUER AND OTHERS. ABSTRACT AND TRANSLATION BY S. PERITZKY, MCDONNELL AIRCRAFT CORP., ST. LOUIS, MO. Messerschmidt A. G., Augsburg, Ger. Jul 1942. 121p photos, drawings, graphs, tables (Text in German) Mi $5.00 Ph $16.25. PB 99162
The optical qualities and methods of producing plexiglass were investigated together with the elimination of reflection and improvement of transparency, resistance against mechanical and chemical influences, and production of curved panes. The etching method was used for reflection compensation. For reduction of mirroring an extremely thin crystalline layer was applied. A great deal of data on the manufacture, calculations, and test-proofing and refining of armor glass panes is also included.

## Paints, Varnishes and Lacquers

PAINTS. Gt. Brit. Ministry of Supply. 1949. 74p drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.25. PB 99537

Blood albumen is prepared from 100 parts of serum to 1 part oil of turpentine, and is used in the preparation of blood albumen glue, for the removal of colour from tannin extracts, for casein paints, and for blood cement. Selected government research reports, v. 2.

## Chemical Engineering and Equipment

HIGH TEMPERATURE LABORATORY KILN, by Ernest H. Faust, Jr., and James Tinklepaugh. New York State College of Ceramics, Alfred, N. Y. Jun 1948. 14p photos, drawings, tables Mi $1.75, Ph $2.50. PB 99485

A report is presented on the design and firing behavior of a gas fired, stabilized zirconia-lined, high temperature laboratory kiln. Utilizing a gas-air mixture, temperatures up to 3400°F were attained, while with the addition of oxygen to the mixture a temperature of 3600°F was reached. At 3600°F the burner ports of Body 194 (a silicon carbide-alumina mixture) fused and oxidized, and minor cracks developed in the zirconia lining. Report no. 20. Contract no. W-33-038-ac 14233. AAF Bd Proj MX 1035. NSCC R20.

## Miscellaneous Chemicals

APPLICATIONS FOR FUNDS FOR THE EXTENSION OF PHTHALIC ACID PLANT. I. G. Farbenindustrie A. G., Schkopau, Ger. 1939-1944. 29f (Text in German) Mi $2.00 Enl Pr $5.00. PB 98158

1. Phthalic acid - Production - Germany 2. Micro BIOS FD 2570/47, Frames 1-26 +2.

Abstract available as PB 98158s. 1p. Mi $1.25, Ph $1.25.

EMULSIFYING TESTS WITH POLYSTYROL EF. I. G. Farbenindustrie A. G., Schkopau, Ger. 1944. 26f graphs (Text in German) Mi $2.00, Enl Pr $5.00. PB 98160

1. Löffler, Karl 2. Polystyrol - P 3. Polystyrol EF (Trade name) 4. Polystyrol - Emulsifiers - Germany 5. Micro BIOS FD 2556/47, Frames 1-25.

Abstracts available as PB 98160s. 1p. Mi $1.25, Ph $1.25.

EMULSION POLYMERIZATION OF ETHYLENE, by Rudolf Kern. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. Feb 1943. 46p diagr, tables Mi $2.50, Ph $6.25. PB 98789

Numerous experiments were conducted on the polymerization of ethylene, alone or in combination with other easy to be polymerized compounds, in aqueous solutions in the presence of oxygen or compounds suitable as oxidizers. One of the experiments was the emulsion polymerization of ethylene with potassium persulfate in the presence of an alkaline pH. This and other polymerization processes were analyzed according to the rate of reaction of ethylene with polymers; the composition of the end products obtained, and their use in industry according to their physical properties.

KATALYTISCHE OXYDATION VON AETHYLN ZU AETHYLENOXYD MITTELS LUFT (BEZU. SAUERSTOFF) (CATALYTIC OXIDATION OF ETHYLENE AND ETHYLENE OXIDE WITH OXYGEN FROM THE AIR), by Worbs. Breslau. Universität. Institut für Chemische Technologie. Oct 1944. 28p (Text in German and English) Mi $2.00, Ph $3.75. PB 98705

A proposed project for converting ethylene to ethylene oxide is summarized. A mixture of metallic silver and calcium carbonate (46% silver) is suggested as being durable and effective enough to be used practically as a catalyst. Laboratory results showed that this mixture gives yields of 70% ethylene oxide based on ethylene. Other operating variables are defined.

PERIODICAL LABORATORY PROGRESS REPORTS ON RESEARCH WORK CONNECTED WITH OXO AND SYNOL ALCOHOL, ALSO HYDROCARBON SYNTHESIS. I. G. Farbenindustrie A. G., Frankfort, Ger. 1940-1944. 205f graphs, tables (Text in German) Mi $7.50 Enl Pr $27.50. PB 98165

1. Hydrocarbons - Synthesis - Germany 2. Ketones, Hydroxy 3. Alcohols, Fatty - Production - Germany 4. Alcohols, Sulfonated - Preparation - Germany 5. Micro BIOS FD 1/48, Frames 1-200.

Abstract available as PB 98165s. 1p. Mi $1.25, Ph $1.25.

PREPARATION AND CHARACTERISTICS OF CHROME-ORGANIC COMPOUNDS, by Hein, Reschke, and others. Leipzig. Universität. Chemisches Laboratorium. 1918-1928. 43p Mi $2.50 Ph $6.25. PB 98681

Various reports by the Chemical Laboratory of the University of Leipzig are presented. The relation between complex constitution and formation of metallo-organic derivatives of chromium salts was investigated together with the mechanism of the reaction between chromo-(III) chloride or chromo-(II) chloride with phenylmagnesium bromide. Further contributions to the transformation of complex chromium salts with phenyl-magnesium bromide and the salt formation of pentaphenyl-chromohydroxide are presented. Translated by O. W. Leibiger Research Laboratories, Inc., Petersburg, N. Y. from Berichte der Deutschen Chemischen Gesellschaft, no. 25 (1949), no. 119 (1927), no. 131 (1927), no. 420 (1927(, no. 144 (1928).

PREVENTION OF ACCIDENTS, MEASURING AND CONTROL INSTRUMENTS, ETC. IN THE MANUFACTURE OF DIGLYCOL, TRIGLYCOL, AND ETHYLENE OXIDE. I. G. Farbenindustrie A. G., Schkopau, Ger. 1943-1944. 23f (Text in German) Mi $2.00 Enl Pr $5.00. PB 98169

1. Anorgana G.m.b.H., Gendorf, Ger. 2. Diethylene glycol - Production - Germany 3. Triethylene glycol - Production - Germany 4. Chemical industries - Safety precautions - Germany 5. Micro BIOS FD 2632/47, Frames 1-22.

Abstracts available as PB 98169s. 1p. Mi $1.25, Ph $1.25.

PRODUCTION OF VINYL METHYL KETONES. I. G. Farbenindustrie A. G., Leverkusen, Ger. May 1940. 6f (Text in German) Mi $1.25 Enl Pr $2.50. PB 99849

1. 3-Buten-2-one - Production - Germany 2. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 3. Micro BIOS FD 1304/48, Frames 1-5.

Abstract in English. PB 99849s is same abstract. 1p. Mi $1.25, Ph $1.25.

SEPARATION OF CARBON MONOXIDE, ACETYLENE AND OTHER CONSTITUENTS FROM INDUSTRIAL GASES. PRODUCTION OF PHOSGENE AND ACETIC ANHYDRIDE. GAS MIXTURE EXPLOSION TESTS. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1931-1943. 39f drawing, graphs, table (Text in German) Mi $2.25, Enl Pr $6.25. PB 98161

1. Carbon monoxide - Purification - Germany 2. Carbon monoxide - Production - Germany 3. Phosgene - Production - Germany 4. Acetic anhydride - Production - Germany 5. Carbon black - Production - Germany 6. Oleyl chloride - Production - Germany 7. Nullgas (Trade name) 8. Micro BIOS FD 2079/47, Frames 1-35.

Abstract available as PB 98161s. 3p. Mi $1.25, Ph $1.25.

ÜBER DIE HERSTELLUNG VON 4-CHLORBÜTEN-1 AUS ALLYCARBINOL UND DESSEN UBERFÜHRUNG IN BUTADIEN DURCH ABSPALTUNG VON SALZSÄURE MITTELS ALCOHOLISCHER LAUGE (PREPARATION OF 4-CHLOROBUTENE-1), by Dr. Schöllig. I. G. Farbenindustrie A. G., Schkopau, Ger. Jul 1942. 7p (Text in German and English) Mi $1.25 Ph $1.25. PB 98704

The preparation of 4-chlorobutene-1 by the reaction of thionyl chloride upon allyl carbinal, a by-product of the butadiene process is described. At a temperature of 10º30ºC a small quantity of 4-chlorobutene-1 is obtained. Only HC1 is liberated and practically no $SC_2$.

VERSUCHE ZUR ANLAGERUNG VON WASSER AN ÄTHYLENOXYD (ADDITION OF WATER TO ETHYLENE OXIDE), by E. Dorrer, Dr. Sauer, W. Mueller. I. G. Farbenindustrie A. G., Schkopau, Ger. Oct 1944. 5p (Text in German and English) Mi $1.25 Ph $1.25. PB 98726

To avoid the difficulties arising in the two common methods of hydrating ethylene to ethylene oxide, addition of water in the presence of hydrogen and hydroxyl ions and hydration under high temperatures and pressures at several pH ranges, new methods of hydration were investigated. Vapor phase hydration with steam over several active catalysts was tried. Translated by Standard Oil Co.

## DETERIORATION STUDIES

EFFECT OF FUNGICIDAL TREATMENT ON THE FUNGUS RESISTANCE AND CORROSION OF VARIOUS TYPES OF METALLIC SLIDE FASTENERS ON COTTON AND NYLON TAPES, by E. F. Little. U. S. Air Material Command. Engineering Division. Materials Laboratory, Wright Field, Dayton, Ohio. Nov 1949. 13p photos, tables Mi $1.75 Ph $2.50. PB 99630

The influence of the copper fungus proofing process covered by Specification AN-M-39, Type I is reported. Factual data is given followed by conclusions and recommendations. Photographs and tables attached. AAF TSEAM MR 666-23F.

INVESTIGATIONS OF THE EFFECT OF MOISTURE AND FUNGI IN THE DETERIORATION OF LOW VOLTAGE RADIO HOCK-UP WIRE. CONTRACT W28-099-ac69. INTERIM ENGINEERING REPORT NO. 16, by R. H. Luce and K. N. Mathes. Rensselaer Polytechnic Institute, Troy, N. Y. Feb 1947. 210p photos, fold. graphs Mi $7.50 Ph $26.25. PB 99591

1. Wire - Tropical deterioration 2. Wire - Fungus proofing 3. Wire - Moisture proofing

For other reports on this contract see PB 98656, PB 99589-99590, 99592-99603.

INVESTIGATIONS OF THE EFFECT OF MOISTURE AND FUNGI IN THE DETERIORATION OF LOW VOLTAGE RADIO HOOK-UP WIRE. CONTRACT W28-099-AC69. INTERIM ENGINEERING REPORT NO. 17, by R. H. Luce and K. N. Mathes. Rensselaer Polytechnic Institute, Troy, N. Y. Mar 1947. 54p photos, fold. graphs Mi $2.75 Ph $7.50. PB 99599

1. Wire - Tropical deterioration 2. Wire - Fungus proofing 3. Wire - Moisture proofing.

For other reports on this contract see PB 98656, PB 99589-99598, 99600-99603.

INVESTIGATIONS OF THE EFFECT OF MOISTURE AND FUNGI IN THE DETERIORATION OF LOW VOLTAGE RADIO HOOK-UP WIRE. CONTRACT W28-099-AC69. INTERIM ENGINEERING REPORT NO. 18, by R. H. Luce and K. N. Mathes. Rensselaer Polytechnic Institute, Troy, N. Y. Apr 1947. 38p fold. graphs Mi $2.25, Ph $5.00. PB 99600

1. Wire - Tropical deterioration 2. Wire - Fungus proofing 3. Wire - Moisture proofing.

For other reports on this contract see PB 98656, PB 99589-99599, PB 99601-603.

INVESTIGATIONS OF THE EFFECT OF MOISTURE AND FUNGI IN THE DETERIORATION OF LOW VOLTAGE RADIO HOOK-UP WIRE. CONTRACT W28-099-AC69. INTERIM ENGINEERING REPORT NO. 19, by R. H. Luce and K. N. Mathes. Rensselaer Polytechnic Institute, Troy, N. Y. May 1947. 22p fold. graphs Mi $2.00 Ph $3.75. PB 99601

1. Wire - Tropical deterioration 2. Wire - Fungus proofing 3. Wire - Moisture proofing.

For other reports on this contract see PB 98656, PB 99589-99600, PB 99602-603.

INVESTIGATIONS OF THE EFFECT OF MOISTURE AND FUNGI IN THE DETERIORATION OF LOW VOLTAGE RADIO HOOK-UP WIRE. CONTRACT W28-099-AC69. INTERIM ENGINEERING REPORT NO. 20, by R. H. Luce and K. N. Mathes. Rensselaer Polytechnic Institute, Troy, N. Y. Jun 1947. 54p fold. graphs Mi $2.75, Ph $7.50. PB 99603

1. Wire - Tropical deterioration 2. Wire - Fungus proofing 3. Wire - Moisture proofing.

For other reports on this contract see PB 98656, PB 99589-99602.

INVESTIGATIONS OF THE EFFECT OF MOISTURE AND FUNGI IN THE DETERIORATION OF LOW VOLTAGE RADIO HOOK-UP WIRE. CONTRACT W28-099-AC69. INTERIM ENGINEERING REPORT NO. 21, by R. H. Luce and K. N. Mathes. Rensselaer Polytechnic Institute, Troy, N. Y. Jul 1947. 64p photos, graphs (part fold) Mi $3.00 Ph $8.75. PB 99598

1. Wire - Tropical deterioration 2. Wire - Fungus proofing 3. Wire - Moisture proofing.

For other reports on this contract see PB 98656, PB 99589-99597, PB 99599-99603.

INVESTIGATIONS OF THE EFFECT OF MOISTURE AND FUNGI IN THE DETERIORATION OF LOW VOLTAGE RADIO HOOK-UP WIRE. CONTRACT W28-099-AC69. INTERIM ENGINEERING REPORT NO. 22, by R. H. Luce, K. N. Mathes, and B. C. Dees. Rensselaer Polytechnic Institute, Troy, N. Y. Aug 1947. 21p photos, drawings Mi $2.00 Ph $3.75. PB 99597

1. Wire - Tropical deterioration 2. Wire - Fungus proofing 3. Wire - Moisture proofing.

For other reports on this contract see PB 98656, PB 99589-99596, PB 99598-99603.

INVESTIGATIONS OF THE EFFECT OF MOISTURE AND FUNGI IN THE DETERIORATION OF LOW VOLTAGE RADIO HOOK-UP WIRE. CONTRACT W28-099-AC69. INTERIM ENGINEERING REPORT NO. 24: DEVELOPMENTAL POLYETHYLENE AND NYLON WIRES, by R. H. Luce and K. N. Mathes. Rensselaer Polytechnic Institute, Troy, N. Y. Oct 1947. 41p fold. graphs Mi $2.50 Ph $6.25. PB 99593

1. Wire - Tropical deterioration 2. Wire - Fungus proofing 3. Wire - Moisture proofing 4. Insulating materials - Nylon 5. Insulating materials - Plastics.

For other reports on this contract see PB 98656, PB 99589-92, 99594-99603.

INVESTIGATIONS OF THE EFFECT OF MOISTURE AND FUNGI IN THE DETERIORATION OF LOW VOLTAGE RADIO HOOK-UP WIRE. CONTRACT W28-099-AC69. INTERIM ENGINEERING REPORT NO. 25: PRELIMINARY EXPERIMENTS ON SURFACE TREATMENT OF INSULATIONS AND BRAID, by R. H. Luce and K. N. Mathes. Rensselaer Polytechnic Institute, Troy, N. Y. Nov 1947. 12p fold. graphs Mi $1.75 Ph $2.50. PB 99590

1. Wire - Tropical deterioration 2. Wire - Fungus proofing 3. Wire - Moisture proofing.

For other reports on this contract see PB 98656, PB 99589, 99591-99603.

INVESTIGATIONS OF THE EFFECT OF MOISTURE AND FUNGI IN THE DETERIORATION OF LOW VOLTAGE RADIO HOOK-UP WIRES. CONTRACT W28-099-AC69. INTERIM ENGINEERING REPORT NO. 26: DEVELOPMENTAL BRAIDS, by R. H. Luce and K. N. Mathes. Rensselaer Polytechnic Institute, Troy, N. Y. Dec 1947. 13p graphs (1 fold) Mi $1.75 Ph $2.50. PB 99589

1. Wire - Tropical deterioration 2. Wire - Fungus proofing 3. Wire - Moisture proofing.

For other reports on this contract see PB 98656, PB 99590-99603.

INVESTIGATIONS OF THE EFFECT OF MOISTURE AND FUNGI IN THE DETERIORATION OF LOW VOLTAGE RADIO HOOK-UP WIRE. CONTRACT W28-099-AC69. INTERIM ENGINEERING REPORT NO. 29: EFFECT OF A MERCURIAL FUNGICIDE ON DC SURFACE RESISTANCE OF AN EXTRUDED VINYL INSULATED WIRE, by R. H. Luce and K. N. Mathes. Rensselaer Polytechnic Institute, Troy, N. Y. Mar 1948. 42p photos, fold. graphs Mi $2.50 Ph $6.25. PB 99592

1. Wire - Tropical deterioration 2. Wire - Fungus proofing 3. Wire - Moisture proofing.

For other reports on this contract see PB 98656, PB 99589-99591, 99593-99603.

INVESTIGATIONS OF THE EFFECT OF MOISTURE AND FUNGI IN THE DETERIORATION OF LOW VOLTAGE RADIO HOOK-UP WIRE. CONTRACT W28-099-AC69. INTERIM ENGINEERING REPORT NO. 30, by R. H. Luce and K. N. Mathes. Rensselaer Polytechnic Institute, Troy, N. Y. Apr 1948. 41p fold. graphs Mi $2.50 Ph $6.25. PB 99594

1. Wire - Tropical deterioration 2. Wire - Fungus proofing 3. Wire - Moisture proofing.

For other reports on this contract see PB 98656, PB 99589-93, 99595-99603.

INVESTIGATIONS OF THE EFFECT OF MOISTURE AND FUNGI IN THE DETERIORATION OF LOW VOLTAGE RADIO HOOK-UP WIRE. CONTRACT W28-099-AC69. INTERIM ENGINEERING REPORT NO. 31, by R. H. Luce and K. N. Mathes. Rensselaer Polytechnic Institute, Troy, N Y. May 1948. 41p Mi $2.50 Ph $6.25. PB 99595

1. Wire - Tropical deterioration 2. Wire - Fungus proofing 3. Wire - Moisture proofing.

For other reports on this contract see PB 98656, PB 99589-99594, PB 99596-99603.

MICROBIOLOGICAL DETERIORATION OF ORGANIC MATERIALS: ITS PREVENTION AND METHODS OF TEST, by Edward Abrams. U. S. National Bureau of Standards. Nov 1948. 44p photos, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.25. PB 99549

Presents a detailed review of the literature on the microbiological deterioration of organic and fibrous materials. Representative problems incidental to the development of test methods for the evaluation of mildew resistance and the development of mildew resistant materials are given. The most widely recognized test methods for the evaluation of mildew-resistance and rot-resistance are listed. A wide variety of fungicides for different uses is classified according to effectiveness. Plastics and plasticizers and related materials are rated according to their susceptibility to support mold growth. NBS P 188.

## ECTRICAL MACHINERY, EQUIPMENT AND SUPPLIES

### Communication Equipment

EARTH MAT FOR THE CATHODE RAY DIRECTION FINDER ANTENNA, by H. L. Armstrong and J. R. Waller. National Research Council of Canada. Radio and Electrical Engineering Division. Laboratories. Oct 1949. 13p diagrs, graphs Mi $1.25 Ph $2.50. PB 99685

Use of an earth mat of limited size to approximate the ideal of an infinite conducting plane for an Adcock antenna installation. A method is described for measuring the impedance of radial wires at the edge of the mat, and thus chosing suitable combinations of lengths to offer a low impedance over a wide bond. NRCC 2016. NRCC ERB-232.

FUNDAMENTALS OF PANORAMIC RECEPTION, by E. I. Green. Bell Telephone Laboratories, Inc., New York, N. Y. Jan 1943. 55p diagrs Mi $2.75 Ph $7.50. PB 99670

1. Radio - Signals 2. Signalling devices 3. Radio reception, Panoramic 4. Radio receivers, Panoramic 5. Western Electric Co., Inc., New York, N Y. 6. U. S. Office of Scientific Research and Development 7. U. S. National Defense Research Committee. 8. OSRD 1224.

Contract no. OEMsr-357.

IMPROVED PANORAMIC RECEIVER, BY E. R. TAYLOR. BELL TELEPHONE LABORATORIES, INC., NEW YORK, N. Y. FINAL REPORT. Jan 1943. 66p diagrs, graphs, tables Mi $3.00 Ph $8.75. PB 99671

1. Radio - Signals 2. Signalling devices 3. Radio reception, Panoramic 4. Radio receivers, Panoramic 5. Western Electric Co., Inc. New York, N. Y. 6. U. S. Office of Scientific Research and Development 7. U. S. National Defense Research Committee 8. OSRD 1224.
Contract no. OEMsr-357.

MANUFACTURE OF RADIO COMPONENTS IN GERMANY (BRITISH ZONE), BY J. KRAMER. BIOS TRIP 3025. Feb 1947. 43f Mi $2.50 Enl Pr $7.50. PB 99812
1. Radio - Components - Manufacture - Germany 2. Rectifiers, Selenium - Manufacture - Germany 3. Resistors - Manufacture - Germany 4. Potentiometers - Manufacture - Germany 5. Capacitors - Manufacture - Germany 6. TOR 94 7. Micro BIOS FD 1284/49, Frames 1-41.

RADIATION FROM A RECTANGULAR SLOT IN A CIRCULAR CYLINDER, by W. K. Saunders and Samuel Silver. California. University. Dept. of Engineering. Oct 1949. 75p drawings, graphs, tables Mi $3.50 Ph $10.00. PB 99686
Report deals with the field distribution from a slot with its boundaries respectively parallel and transverse to the axis of the cylindrical waveguide. Particular attention is directed to the narrow axial slot having an axial dimension of a half-wavelength and a transverse dimension very small compared to wavelength. Bureau of Ships Contract NObsr-39401. Report no. 158. UC DE ERP 158.

## Electronics

PROPAGATION OF ELECTROMAGNETIC WAVES THROUGH A STRATIFIED MEDIUM, BY BERNARD SALZBERG. U. S. NAVAL RESEARCH LABORATORY, BELLEVUE, D. C. PART I. GENERAL ANALYSIS. Aug 1949. 19p diagr Mi $1.75 Ph $2.50. PB 99627
A general analysis of the propagation of electromagnetic waves through a stratified medium is developed from Maxwell's equations. The medium is assumed to be divided into m plane-parallel layers, the first and mth of which are semi-infinite. Formulas for the resulting reflection and transmission are derived. NRL R3472.

STABILIZED VOLTAGE SUPPLY AND LINEAR AMPLIFIER FOR PHOTOMULTIPLIER TUBES, by W. S. Plymale Jr., and D. F. Hansen. U. S. Naval Research Laboratory, Bellevue, D. C. Oct 1949. 15p photos, diagrs, graphs Mi $1.75 Ph $2.50. PB 99615
In experiments involving light detection, a need often arises for an a-c instrument to utilize readily the sensitivity of photomultiplier tubes. An apparatus is described which is easily adjusted, gives stable operation on a-c lines, and is reasonably compact. NRL R3555.

## Miscellaneous

CONTACT TRANSIENTS IN SIMPLE ELECTRICAL CIRCUITS, by F. E. Martin and H. E. Stauss. U. S. Naval Research Laboratory, Bellevue, D. C. Sep 1949. 16p photos, diagrs, graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 99613
An oscilloscopic study has been made of transient types occurring over a range of inductance and capacity values in direct current circuits. The results reported are similar to those obtained by the earlier experimenters, but amplify them and broaden their validity. NRL R3525.

EQUIPMENT TO MEASURE THE ATTENUATION OF CABLE AT ULTRA HIGH FREQUENCIES, by Isidore Bady. U. S. Fort Monmouth Signal Laboratory. Sep 1949. 20p photos, drawings Mi $1.75 Ph $2.50. PB 99684

With the test equipment described in this technical memorandum, it is possible to measure the attenuation at 100 to 400 megacycles of any radio frequency cable, coaxial or twin conductor, regardless of its impedance. Tests and checks against precision attenuators indicate that an accuracy of 0.1 db can be obtained. The equipment can be easily and inexpensively constructed and measurements can be made quickly. SCEL Proj no. 2006P DA 3-26-00-600. SCEL TM M-1215.

FINAL ENGINEERING REPORT ON STUDY OF TUBULAR SHIELDING CONDUIT, VOL. II. Technicraft Laboratories, Inc., Thomaston, Conn. Dec 1, 1948-Apr 30, 1949. 138p drawings, graphs, tables Mi $5.50 Ph $17.50. PB 99517

To investigate the fundamental principles of electromagnetic shielding, with particular reference to tubular shields at radio frequencies. To apply information resulting from this investigation to the development of improved flexible tubular shielding for general aircraft use and/or for high voltage pulse cables. Report is devoted to a more complete study of the principles of shielding and an investigation of techniques applicable to evaluation of the effectiveness of specimens of tubular shielding. Report NS-F2. Contract NC a(s)-8098.

GERMAN INTERFERENCE FILTERS, by J. A. Sanderson and R. E. Ueberall. U. S. Naval Research Laboratory, Bellevue, D. C. Jan 1946. 27p graphs, tables Mi $2.00 Ph $3.75. PB 99851

1. Janaer glaswerk Schott & Gen., Jena, Ger. 2. Filters, Light - Germany 3. NRL H-2731.

LANTERN REFLECTOR, BY H. W. SPANGLER. U. S. NAVAL MEDICAL FIELD RESEARCH LABORATORY, CAMP LEJEUNE, N.C. RESEARCH AND DEVELOPMENT PROJECT NM112045. Nov 1948. 12p photos, diagrs Mi $1.75 Ph $2.50. PB 99519

The prototype model has been designed to reflect and concentrate as much light as possible about a point three feet beneath the base of the lantern, this point having been established as the optimum when using the lantern as an overhead light in a field operating room.

PREPARATION OF HARD OXIDE FILMS ON EVAPORATED ALUMINUM SURFACES AND APPLICATIONS OF SUCH FILMS, by Georg Hass. U. S. Army. Corps of Engineer Research and Development Laboratories. Jul 1949. 34p photos, drawings, graphs, tables Mi $2.25 Ph $5.00. PB 99756

Oxide films of precisely controlled thickness can be produced on evaporated aluminum mirrors by anodic oxidation in electrolytes such as ammonium tartrate. The thickness of the oxide layer formed in a given length of time increases linearly with the applied voltage and is 13.0 Angstrom units (A) per volt for 2 minutes' anodizing time. Tables, graphs and suitability are given. ERDL R 1134.

STUD WELDING. U. S. Bureau of Ships. Oct 1949. 8p photos, drawings Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.25. PB 99587

1. Welding, Stud 2. NAVSHIPS 250-740 3. NAVSHIPS N 98.

Industrial notes no. 98.

SURVEY OF ELECTRICAL INSULATION PRACTICES, by Max A. Faucett, Constantine Houpis and George E. Leibinger. Illinois. University. Engineering Experiment Station, Urbana, Ill. Nov 1949. 110p tables, graphs Available from University of Illinois, Urbana, Ill. $.70. PB 99680
1. Insulation, Electrical.
University of Illinois. Bulletin, vol. 47, no. 23.

## FOOD AND KINDRED PRODUCTS

ANLAGE FÜR DIE GEWINNUNG VON 1500 JATO TROCKENHEFE IN DER CELLULOSE FABRIK SILLEIN (PLANT FOR THE PRODUCTION OF 15 TONS ANNUALLY OF DRIED YEAST AT ZELLULOSEFABRIK SILLEIN). Zellulosefabrik Sillein. Aug 1942. 4f Mi $1.25 Ph $2.50. PB 99460
1. Yeast - Production - Germany 2. Micro BIOS FD 697/49, Frames 1-4.
Will not reproduce well.

BERICHT ÜBER ARBEITEN DES INSTITUTS FÜR GÄRUNGSGEWERB UND STÄRKEFABRIKATION IN BERLIN BETREFFENDE MIKROBIELLE SYNTHESEN (REPORT OF WORK OF THE INSTITUTE CONCERNING MICRO SYNTHESIS). Institut für Gärungsgewerbe und Stärkefabrikation, Berlin. n.d. 12f (Text in German) Mi $1.75 Enl Pr $3.75. PB 99458
1. Albumins - Synthesis - Germany 2. Fats - Synthesis - Germany 3. Vitamins - Synthesis - Germany 4. Vitamin B1 - Germany 5. Yeast, Food - Germany 6. Micro BIOS FD 694/49, Frames 1-12.

BERICHT ÜBER DER LABORATORIUMSVERSUCHE ZUR MOLKENVERHEFUNG (LABORATORY TESTS ON YEAST PROPAGATION WITH MILK CULTURES). Zellstoffabrik Waldhof A. G., Mannheim, Ger. Oct 1942-Nov 1944. 32f Mi $2.25 Enl Pr $6.25. PB 99459
1. Yeast - Culture - Germany 2. Micro BIOS FD 696/49, Frames 1-32.

FATS AND OILS VITAL TO MARGARINE, by N. H. Grace. National Research Council of Canada. Div. of Applied Biology. n.d. 9p tables Mi $1.25 Ph $1.25. PB 99420
Reference is made to the use of fats in human nutrition and to their digestibility. This is followed by a description of the fatty acid composition of butterfat and of several of the fats and oils used in margarine formulations. Bibliography and tables attached. NRCC 2000.

NORWEGIAN EMERGENCY FOOD CONCENTRATE, KG-12, by H. C. Dyme, H. L. Strong, K. Rodahl and Osmo I. Niemi. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Dec 1949. 9p graph, tables Mi $1.25 Ph $1.25. PB 99631
The factual data and conclusions are given followed by the recommendation that KG-12 not be considered as an item of ration for USAF emergency or survival use. p. 7-9 is Laboratory report no. 835, by U. S. Quartermaster Food and Container Institute. AAF TSEAA MR 691-3K.

ORGANISATION UND STAND DER HEFEPRODUKTION 1935/36-1937 (YEAST PRODUCTION 1935/36-1947), by Dr. Ziegelmayer. n.d. 38f (Text in German) Mi $2.25 Enl Pr $6.25. PB 99457
1. Yeast - Production - Germany 2. Micro BIOS FD 693/49, Frames 4-41.

RELATIVE STABILITY OF THIAMINE CHLORIDE AND OTHER DERIVATIVES IN CANNED BREAD, BY C. M. HOLLENBECK, FOOD TECHNOLOGY LABORATORY, MERCK & CO., INC., RAHWAY, N. J. U. S. QUARTERMASTER FOOD AND CONTAINER INSTITUTE. REPORT NO. 10, JUL 1946-JUL 1949. 1949. 5p tables Mi $1.25 Ph $1.25. PB 99532
Based on observations one method of insuring the desired level of thiamine in canned bread after baking and storage is to add a 100% overage of thiamine to the enrichment mixture used in the flour or in the dough. With the factors of color, odor, flavor, toxicity, cost, and efficacy of a stabilized derivative, if one could be found, taken into consideration the use of higher levels of thiamine hydrochloride is the most feasible solution to the problem of thiamine loss in canned bread at present.

RESULTS OF A TRIAL-FEEDING WITH THE ADDITIONAL FOOD-MIXTURE RAMIKAL. Michelsen, Hans & Co., Hamburg, Ger. Aug 1945. 27f (Text in German and English) Mi $2.00 Enl Pr $5.00. PB 99462
1. Ramikal (Trade name) 2. Cattle - Feeding - Germany 3. Feeding and feedingstuffs - Germany 4. Micro BIOS FD 702/49, Frames 1-27.

STUDY OF THE PHYSICAL AND CHEMICAL CHANGES OCCURING IN BREAD DURING STORAGE, by W. F. Geddes, R. A. Bottomley, C. W. Bice and R. Stenberg. U. S. Quartermaster Food and Container Institute. October 1, 1948 - June 30, 1949. Jun 1949. 4p Mi $1.25, Ph $1.25. PB 99701
The present report deals with studies along 3 main lines: (1) an evaluation of various methods employed in the measurement of bread staling, (2) preliminary experiments with an instrument for automatic measurement of compressibility and elastic regain of bread crumb, and (3) further studies on the browning reaction in canned bread. Tables and graphs are included.

VERSUCHSBERICHT ÜBER HEFEFLOCKEN UND HEFEPULVER (REPORT OF RESEARCH ON YEAST FLAKES AND YEAST POWDER). Munich. Institut für Lebensmittelforschung. Nov 1944. 2f Mi $1.25 Enl Pr $2.50. PB 99461
1. Yeast - Research - Germany 2. Micro BIOS FD 698/49, Frames 1-2.

## UELS AND LUBRICANTS

KNOCK-LIMITED PERFORMANCE OF FUEL BLENDS CONTAINING AROMATICS. U. S. LEWIS FLIGHT PROPULSION LABORATORY, CLEVELAND, OHIO. VI. 10 ALKYLBENZENES, by I. L. Drell and H. E. Alquist. Dec 1949. 55p drawings, graphs, tables Mi $2.75 Ph $7.50. PB 99624
Knock data are presented for 1,2,3-trimethylbenzene, 1-ethyl-2-methylbenzene, o-diethylbenzene, 1,3-dimethyl-5-ethylbenzene, 1-ethyl-3-methylbenzene, p-diethyl-

benzene, 1,3,5-triethylbenzene, 1,3-diethyl-5-methylbenzene, 1-tert-butyl-3-methylbenzene, and 1-tert-butyl-4-methylbenzene, each in blends with base fuels. In general, the aromatics gave blend knock ratings in about the order listed, with the three aromatics having ortho structures giving much lower ratings than the other seven. See also PB 94123, PB 94179, PB 61041, PB 63848, and PB 94180. NACA TN 1994.

PRESSURE-SENSITIVE SYSTEM FOR GAS-TEMPERATURE CONTROL, by Richard S. Cesaro and Norman Matz. U. S. Flight Propulsion Research Laboratory, Cleveland, Chio. Mar 1948. 11p graphs Available from Supt. Docs., U. S. Govt. Printing Office, Washington 25, D. C. $.15. PB 99527

A thermodynamic relation is derived and simplified for use as a temperature-limiting control equation involving measurement of gas temperature before combustion and gas pressures before and after combustion. For critical flow in the turbine nozzles of gas-turbine engines, the control equation is further simplified to require only measurements upstream of the burner. Hypothetical control systems are discussed to illustrate application of the control equations. NACA 896.

PROCEEDINGS OF A COAL BRIQUETTING CONFERENCE SPONSORED BY THE NATURAL RESOURCES RESEARCH INSTITUTE, UNIVERSITY OF WYOMING, JUNE 24-25, 1949, LARAMINE, WYO. Coal Briquetting Conference, University of Wyoming, Laramie, Wyo. 1st, 1949. Oct 1949. 119p Available from the University of Wyoming, Laramie, Wyo. $1.00. PB 99373

1. Coal - Briquetting 2. Wyoming. University. Natural Resources Research Institute, Laramie, Wyo.

Information circular no. 3.

PROJECT OF A SS (LUBE) OIL PLANT AT HEYDEBRECK, CORRESPONDANCE, REPORTS, MINUTES OF MEETINGS. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1941-1943. 202f (Text in German) Mi $7.50 Enl Pr $27.50. PB 99846

1. SS906 (Lubricating oil) 2. Lubricating oils - Production - Germany 3. Micro BIOS FD 591/48, Frames 110000 664-861.

Abstract in English. Same abstract is PB 99846s. 2p. Mi $1.25, Ph $1.25.

SEPARATION OF PROPANE AND BUTANE, PROPYLENE AND ETHYLENE OR PROPANE, AND OF PROPYLENE FROM VARIOUS GAS MIXTURES. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1939-1944. 142f drawings, graphs, tables (Text in German) Mi $5.75 Enl Pr $20.00. PB 99843

1. Propene - Derivatives - Germany 2. Olefins - Production - Germany 3. Butylene - Production - Germany 4. Micro BIOS FD 589/48, Frames 900000 544-657.

Abstract in English. Same abstract is PB 99843s. 2p. Mi $1.25, Ph $1.25. CIOS target 30/4.03.

## INSTRUMENTS

APPLICATION OF A MAGNETIC LENS SPECTROMETER TO THE MEASUREMENT OF GAMMA RADIATION FROM $ZN^{65}$ AND $CO^{60}$, by Erling N. Jensen, L. Jackson Leslett and William W. Pratt. U. S. Atomic Energy Commission. Sep 1947. 15p photo, drawings, graphs Limited supply mimeo $.15. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.15. PB 99337



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Describes the instrument and discusses the effect of the thickness of the radiator used for the production of photoelectrons and the influence of the earth's magnetic field; energy values for the gamma-ray of Zn-65 and for the two lines of Co-60 are reported; figures included. AECD 2286.

DRAWINGS - COINCIDENCE ANALYZER, by Matthew Sands. U. S. Atomic Energy Commission. Los Alamos Scientific Laboratory. Mar 1947. 66p drawings only Limited supply mimeo $.25. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.25. PB 99365

Miscellaneous drawings of circuit diagrams, specifications, lay outs, installations. MDDC 815.

HIGH-SPEED GRAPHIC SWEEP RECORDERS DERIVED FROM THE KEINATH SCANNING TECHNIQUE, by Roger Brown Loucks. U. S. Air Materiel Command, Wright Field, Dayton, Ohio. Oct 1949. 12p Mi $1.75 Ph $2.50. PB 99440

Several types of "inertialess" graphic sweep records have been developed by utilizing the scanning principle previously described by Keinath. The present models of these sweep recorders have a frequency ceiling of 60 sparks per second, but methods are described for constructing units which would register 400 or more sparks per second. The techniques which have been developed are particularly designed for inertialess recording of isotonic muscle contractions or for making continuous multi-trace records of autonomic responses. The recorders which are described are relatively inexpensive and obviate the time and labor involved in photographic techniques. Contract W-33-038-ac-15230. AAF TR 5964.

IMPROVED WEIGHING EQUIPMENT FOR LIVESTOCK MARKETING. U. S. Dept. of Agriculture. Production and Marketing Administration. Livestock Branch. Jun 1949. 35p photos, tables Available from U. S. Dept. of Agriculture, Washington 25, D. C. PB 99545

IMPROVEMENT OF THE PEDOGRAPH, M1, PREPARED BY JOHN W. COX. U. S. ARMY. CORPS OF ENGINEERS. ENGINEER RESEARCH AND DEVELOPMENT LABORATORIES, FORT BELVOIR, VA. PROJECT 8-34-01-001. Aug 1948. 74p diagrs, graphs, tables Mi $3.50 Ph $10.00. PB 99512

This final report covers the modification of the Pedograph, M1, and the engineering tests of the improved pedograph, in order to increase the usefulness of the instrument for rough mapping and for navigation. ERDL R1056.

INSTRUMENTATION FOR NUCLEAR STUDIES WITH EXTERNALLY-FOCUSED DEUTERON BEAM FROM 10-MEV CYCLOTRON, by B. R. Curtis, J. L. Fowler and L. Rosen. U. S. Atomic Energy Commission. Los Alamos Scientific Laboratory. Feb 1949. 17p photos, drawings, graphs Limited supply mimeo $.10. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10. PB 99356

Detailed description of an apparatus for bringing out the deuteron beam from the Los Alamos cyclotron and focusing it at the center of a reaction chamber 15 feet from the cyclotron and outside the 3 foot water and paraffin shield, so as to eliminate the high neutron and gamma-ray backgrounds; figures. MDDC LADC 603. AECD 2472.

MODIFICATION AND TEST OF THE STEREOPLANIGRAPH, by John T. Pennington and J. W. Halbrook. U. S. Army. Corps of Engineers. Engineer Research and Development Laboratories. Apr 1948. 61p photos, tables Mi $3.00, Ph $8.75. PB 99470

This report covers the modification of the Zeiss stereoplanigraph and subsequent tests conducted to determine its capabilities in compiling topographic maps, either from terrestrial or aerial pairs of photographs. Tests were made both before and after the instrument had been modified. Project 8-35-01-001. ERDL R1047. ENG EB MPS 408.

PHYSICAL CHARACTERISTICS OF A SONIC INTERFEROMETER, by N. Underwood, T. V. Blosser and R. R. Feezell. U. S. Atomic Energy Commission. Aug 1948. 20p drawings, graphs Limited supply mimeo $.10. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10. PB 99354

Description and a detailed discussion of operational characteristics; a modified electrical circuit for resonance was incorporated in the device; figures and graphs; reference. AECD 2354.

POSITIVE MESONS PRODUCED BY THE 184-INCH BERKELEY CYCLOTRON, by John Burfening, Eugene Gardner and C. M. G. Lattes. U. S. Atomic Energy Commission. Oct 1948. 11p photos, drawings, graphs Limited supply mimeo $.10. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10. PB 99339

Positive mesons produced by 380 Mev alpha particles were by means of photographic plates; experimental procedures and results; figures. MDDC UCRL 171. AECD 2334.

A PRECISION ELECTRONIC $p^H$ CONTROL, by J. E. Breeze. National Research Council of Canada. 1948. 10p photos, diagrs Mi $1.25 Ph $1.25. PB 99243

1. Controls, Electronic - Canada 2. Hydrogen ion concentration - Control apparatus - Canada 3. NRCC 1823.

Reprinted from Proceedings of the National Electronic Conference, v. 4, 1948, p. 451-460.

PRELIMINARY REPORT ON THE HIGINBOTHAM SCALER, by Ernest Wakefield. U. S. Atomic Energy Commission. Argonne National Laboratory. Apr 1944. 6p drawings, tables Limited supply mimeo $.05. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.05. PB 99368

Operations described; test data; circuit diagram; parts list. MDDC 832.

R. F. SYSTEM FOR FREQUENCY MODULATED CYCLOTRON, by K. R. MacKenzie and V. B. Waithman. U. S. Atomic Energy Commission. Aug 1946. 12p photos, drawings, graphs Limited supply mimeo $.10. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10. PB 99348

A grounded grid oscillator and a single dee resonant system for use with a frequency modulated cyclotron are described. Coupling constants, phase correction, amplitude modulation and discharge phenomenon are discussed. MDDC BP 25. MDDC 1045.

RESISTANCE-TEMPERATURE CHARACTERISTICS OF FIXED COMPOSITION RESISTORS, by Gerald Landsman. U. S. Atomic Energy Commission. Argonne



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National Laboratory. Apr 1945. 9p graphs, tables Limited supply mimeo $.10. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10. PB 99343

Resistance was measured at 25°C (base ambient temperature). The resistors were then maintained at the successive temperatures indicated in the curves. After the top temperature had been reached, the resistors were allowed to return to 25°C. The resistors were then measured again not less than one hour after they had come back to the base-ambient temperature. The results are summarized. MDDC CI 2861. AECD 1554.

STARS IN PHOTOGRAPHIC EMULSIONS - PART I. EXPERIMENTAL, by Eugene Gardner and Vincent Peterson. U. S. Atomic Energy Commission. Dec 1947. 16p photos, drawings, graphs, tables Limited supply mimeo $.10. Also available from U S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10. PB 99235

Photographic plates were bombarded in the 184" Berkeley cyclotron for the purpose of studying stars initiated by deuterons and alpha particles. MDDC UCRL 18. MDDC 1594.

TRADE LITERATURE, FERROPRINTS, PATENT APPLICATIONS, ETC. RELATING TO MEASURING, RECORDING AND CONTROLLING INSTRUMENTS. Hartmann & Braun A. G., Frankfurt, Ger. 1936-1945. 696f (Text in German and English) Mi $9.00 Enl Pr $91.25. PB 99818

1. Instruments, Control - Germany 2. Instruments, Indicating - Germany 3. Instruments, Measuring - Germany 4. Recorders - Germany 5. BIOS FR 1007 Item 9 LD 6. Micro BIOS FD 526/48, Frames 1-568, 1-45 English.

USE OF CONTROL INSTRUMENTS IN HYDROGENATION PLANTS. I. G. Farbenindustrie, A. G., Ludwigshafen, Ger. 1942. 128f photos, drawings, diagrs (Text in German) Mi $5.00 Enl Pr $17.50. PB 99814

1. Instruments, Control - Germany 2. Recorders - Germany 3. Micro BIOS FD 938/48, Frames 1-124.

## LEATHER AND LEATHER PRODUCTS

STUDIES ON IRON TANNAGE, TRANSLATION OF A SERIES OF PAPERS GIVEN AT A SYMPOSIUM AT KAISER WILHELM INSTITUTE, DARMSTADT, GERMANY IN APRIL 1948. TRANSLATED FROM VOL. III, COLLOQUIUMBERICHTE, OF THE INSTITUTE FOR TANNING CHEMISTRY OF THE TECHNICAL COLLEGE, DARMSTADT. EDITED by Prof. Dr. A. Küntzel. U. S. Office of the Quartermaster General. Military Planning Division, Research and Development Branch. Nov 1948. 45p graphs, tables Mi $2.50 Ph $6.25. PB 99405

Translated document covering a German symposium on replacement materials in the tanning of leather. Iron tannage is considered as a replacement for chrome iron. QMC LSR 5.

## LUMBER AND WOOD PRODUCTS

HIGH-YIELD PULPING PROCESSES IN JAPAN, by Harold R. Murdock. Supreme Commander for the Allied Powers. Natural Resources Section. Nov 1949. 41p

photos, diagrs, graphs, map, tables Mi $2.50 Ph $6.25. PB 99408
American practices have been carefully studied and their value to Japanese production appraised. The higher yield pulping process seams particularly suitable for Japan's forests. Present Japanese processes are reviewed. SCAP NRS 123.

SWELLING OF WOOD UNDER STRESS, A DISCUSSION OF ITS HYGROSCOPIC, ELASTIC AND PLASTIC PROPERTIES. BASED ON A COURSE OF LECTURES GIVEN AT SVENSKA TRÄFORSKNINGS-INSTITUTET, STOCKHOLM, SWEDEN, MARCH 1948, by W. W. Barkas. Gt. Brit. Dept. of Scientific and Industrial Research. Forest Products Laboratory, Aylesbury, Eng. Jan 1949. 110p photos, drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N Y. $1.90. PB 99548
This book, based on a course of lectures given at Svenska Träforskningsinstitutet Stockholm, Sweden, is mainly concerned with a description of work done at the Forest Products Laboratory to establish the relations between the hygroscopic and elastic properties of cellulose materials, whereby the former may be used to calculate the latter. It introduces the conception of "instantaneous elasticity" which allows the thermodynamic method to be applied accurately to solids which like wood, are partially plastic and concludes with a study of sorption hypteresis. The treatment is descriptive and diagrammatic rather than mathematical.

## MACHINERY

ANALYSIS OF VARIATION OF PISTON TEMPERATURE WITH PISTON DIMENSIONS AND UNDERCROWN COOLING, by J. C. Sanders and W. B. Schramm. U. S. Flight Propulsion Research Laboratory, Cleveland, Ohio. Jan 1948. 14p photo, diagrs, graphs Available from Supt. Docs., U. S. Gov't Printing Office, Washington 25, D. C. $.15. PB 99565
The analysis consists of the calculation of operating temperatures at various points in the piston body on the basis of the experimentally determined surface heat-transfer coefficients and boundry-region temperatures, as well as arbitrarily selected surface coefficients. NACA 895.

COMPOUND; CORROSION PREVENTIVE AIRCRAFT ENGINE (HEAVY OIL TYPE), PREPARATION OF SPECIFICATION FOR, by J. E. Carroll. U. S. Naval Air Material Center. Aeronautical Materials Laboratory, Philadelphia, Pa. Oct 1948. 53p drawing, graphs, tables Mi $2.75 Ph $7.50. PB 99505
Investigations were made to obtain technical information which would form the basis of a specification for an engine preservative compound whose corrosion preventive properties would be superior to those of AN-VV-C-576. Formula No. L216-20 passed all the requirements set forth in the appended specification and therefore was recommended for inclusion on the initial bulletin of acceptable compounds. The proposed ANA specification, which is appended, was recommended for the procurement of heavy oil type internal engine preservative compounds. NAM AML AE 424606.

EFFECT OF CERTAIN FACTORS ON THE EFFICIENCY OF A HAND-FIRED, NATURAL-DRAUGHT, LANCASHIRE BOILER. Gt. Brit. Dept. of Scientific and Industrial Research. Fuel Research, Greenwich, Eng. Aug 1949. 44p photo, diagrs, graphs, table Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.35. PB 99540
1. Boilers - Design - Gt. Brit. 2. DSIR FR TP 55.



UNIVERSITY OF MICHIGAN LIBRARIES

ELECTRONIC PRECISION SPEED CONTROL FOR INDUCTION MOTORS, by Donald H. Raudenbush. Engineering Research Associates, Inc., St. Paul, Minn. n.d. 17p diagrs, graphs Mi $1.75 Ph $2.50. PB 99665

A precision electronic speed control for fractional horsepower induction motors is described. By use of quartz crystals, it is possible to hold in synchronism several remotely located and unconnected systems after initial synchronisation.

GAS TURBINE WHEEL FORGING, by J. Perlmutter. U. S. Air Materiel Command. Engineering Division. Materials Laboratory, Wright Field, Dayton, Ohio. May 1946. 15p photos Mi $1.75 Ph $2.50. PB 99484

The conduction of a metallurgical examination of two gas turbine wheel forgings, is discussed. The forgings were sectioned along the diameter, surface ground, and hardness tests made on the cross sections. Deep etch tests and comparison with overspeed test results on other wheels indicated the probable soundness and normal quality of the materials. Discussions of the forging procedures and photos of the specimens supplement the report. AAF TSEAM MR 5064, add. 1.

INCREASED UTILIZATION OF SHAPERS. U. S. Bureau of Ships. Sep 1949. 10p photos, diagrs Available from Office of Technical Services $.25. PB 99541

1. Shapers 2. NAVSHIPS 250-740 3. NAVSHIPS IN 97.

INVESTIGATION REPORT ON THE FAN OPERATING IN THE INSTITUTE'S MEDIUM WIND TUNNEL. Stuttgart. Technische Hochschule, Forschunginstitut für Kraftfahrwesen und Fahrzeugmotoren. 1939. 117f (Text in German) Mi $4.75 Enl Pr $16.25. PB 90719

1. Fans Wind tunnel - Germany 2. Micro BIOS FD 1633/47 Frames 1-90. Abstract available as PB 90719s. 2p. Mi $1.25 Ph $1.25.

LUBRICATION OF MACHINE TOOLS. U. S. Bureau of Ships. Jan 1949. 12p diagrs Available from U. S. Office of Technical Services, Washington 25, D. C. $.50. PB 99510

1. Tools. Machine - Lubrication 2. Bearings - Lubrication 3. NAVSHIPS 250-740 4. NAVSHIPS IN 87.

NEW METHODS OF TESTING MATERIALS FOR BEARINGS, by M. M. Krushchov. Oct 1948. 17p diagrs Mi $1.75 Ph $2.50. PB 99572

For breaking-in test on bearing metals a technique was devised based on the production of depressions of friction of lubricants, on plane surfaces of test specimen. The selection of this method was based on the identical character of the change both in test procedure and in the phenomena of breaking a bearing on a shaft. In the test under constant load, the rate of wearing of the sample is determined by the increase of the depth of the depressions for each friction-run. A detailed investigation of the phenomena occuring in such a test showed the expediency of conducting tests not at constant load, but with a load increase by stages over identical and sufficiently greater intervals of the friction-run. Translated by Francis X. Prior from Reports of the Academy of Sciences U.S.S.R., no. 10 1948, p. 1613-1620. Translation no. 361. STS 76.

PARTS AND INSTRUCTION BOOKS, INTERNAL COMBUSTION ENGINES, GENERAL MOTORS 8-268-A, 8-268. Book 1-2, 5-6. U. S. Bureau of Ships. Apr 1949. 402f Mi $9.00 Enl Pr $53.75. PB 99320

1. Engines, Internal combustion - Maintenance and repair 2. Engines, Internal combustion - Parts 3. 8-268 (Engine) 4. 8-268A (Engine) 5. Micro NAVSHIPS D6136.

PORTABLE 25 K.W. GASOLINE DRIVEN GENERATOR UNIT. U. S. Bureau of Ordnance. Apr 1943. 148p drawings, tables Available for loan and reference from the Office of Technical Services, U.S. Dept. of Commerce, Washington 25, D.C. PB 99558

1. Generators, Gasoline driven 2. Generators, Portable 3. NAVORD OP 896.

SCHNELLPRESSENFABRIK FRANKENTHAL ALBERT & CIE, A. G., FRANKENTHAL/PFALZ. PRINTING MACHINES. REPORTED BY P. B. BAUSCH. BRITISH INTELLIGENCE OBJECTIVES SUB-COMMITTEE. BIOS TRIP NO. 3109, 20TH-26TH. Apr 1947. 4p Mi $1.25 Ph $1.25. PB 99449

1. Printing presses - Germany.

See also PB 34020 for earlier report on this firm.

WORKING DRAWINGS OF TOOLS FOR HANDLING RADIOACTIVE SOURCES, by A. Morrison and K. Parry. National Research Council of Canada. Division of Physics. Industrial Radiology Laboratory. n.d. 51p drawings Mi $2.75 Ph $7.50. PB 99699

Drawings of four tools designed for handling radioactive materials. Each tool provides for about a meter of separation between the active source and the hand carrying the tool. NRCC 2025. NRCC PR-16.

## MEDICAL RESEARCH AND PRACTICE

ANTHROPOMETRIC NOMOGRAPH OF ARMY MEN, by Francis E. Randall. U. S. Climatic Research Laboratory, Lawrence, Mass. Jan 1949. 20p graph, tables Mi $1.75 Ph $2.50. PB 99974

An analysis was made of an Army population in order to present the interrelationships which exist between twenty-four bodily dimensions and two independent bodily dimensions, stature and chest circumference. The result is a nomograph from which can be easily read the average values of the twenty-four independent dimensions associated with any selected pair of stature and chest circumference values. The nomograph was prepared to aid the designers and developers of clothing and personal equipment used by Army men. QMC EPS 147.

ANTHROPOMETRIC NOMOGRAPH OF ARMY WOMEN, by Francis E. Randall and Ella H. Munro. U. S. Climatic Research Laboratory, Lawrence, Mass. Feb 1949. 13p graph, tables Mi $1.75 Ph $2.50. PB 99973

An analysis was made of an Army female population, 18-29 years of age, in order to present the interrelationships which exist between eight bodily dimensions and two independent bodily dimensions, Cervicale Height and Hip Circumference. The result is a nomograph from which can be easily read the average values of the eight independent dimensions associated with any selected pair of Cervicale Height and Hip Circumference values. The nomograph was prepared to aid designers and developers of clothing and personal equipment used by Army women. QMC EPS 148.

EFFECT OF RUTIN UPON THE RESPONSE OF THE RAT TO TOTAL BODY X-IRRADIATION, by H. I. Kohn, P. W. Robinett and M. N. Cupp. U. S. Atomic Energy Commission. Oak Ridge National Laboratory. Jun 1948. 8p tables Limited supply mimeo $.10. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10. PB 99363



UNIVERSITY OF MICHIGAN LIBRARIES

Experiments to determine whether rutin can influence the reaction of the rat to 250 Kv x-rays; studies were also made on normal human and rat blood to determine the effect of rutin on the hemorrhagic tendency; experimental procedures and results discussed. AECD 2176.

EFFECT OF TOTAL BODY X-RADIATION, ANTISTINE, AND PYRIBENZAMINE ON THE PHAGOCYTIC FUNCTION OF THE RETICULE ENDOTHELIAL SYSTEM IN RABBITS INJECTED INTRAVENOUSLY WITH RADIOACTIVE CELLOIDAL GOLD, by Jack Barrows, John L. Tullis and F. W. Chambers, Jr. U. S. Naval Medical Research Institute, Bethesda, Md. Jul 1949. 29p photos, graphs, tables Mi $2.00 Ph $3.75. PB 99231

No significant differences in the rate of removal of collodial gold from the blood following x-radiation or treatment with antihistamine drugs or histamine were observed. It is concluded that exposure to ionizing radiation does not functionally impair the RES, nor are the antihistamine drugs capable of inhibiting phagocytosis by the RES in the rabbit. NMRI NM 007039 R24.

EFFECT OF TOTAL BODY X-RADIATION ON 17 KETOSTEROID EXCRETION IN DOGS, by G. H. Lawrence. U. S. Naval Medical Research Institute, Bethesda, Md. Jun 1949. 14p diagrs, table Mi $1.75 Ph $2.50. PB 99057

Urinary excretion of 17 ketosteroids was followed in 11 dogs exposed to a minimal lethal dose of 1000 Kv total body x-radiation. The excretion pattern is interpreted as indicating an alteration of adrenal cortical and/or for testicular activity in these animals. References, tables, and charts attached. NMRI Proj NM 007039 R22.

NATURAL OCCURRENCE OF PHASE 2 OF SALMONELLA PARATYPHI A, by L. A. Barnes, P. R. Edwards and Mary Babcock. U. S. National Naval Medical Center, Bethesda, Md. Sep 1949. 4p Mi $1.25, Ph $1.25. PB 98952

S. paratyphi A, as commonly encountered, has the formula I,II,XII: a, although the 1,5 flagellar phase has been induced artificially, this report presents the first description of the natural occurrence. NMRI Proj NM 005010 (X-756)R9.

PAPERS SUBMITTED FOR PUBLICATION AND PRESENTATION DURING THE FISCAL YEAR 1948. U. S. National Institute of Health, Bethesda, Md. n.d. 40p Mi $2.25 Ph $5.00. (Limited supply available free from National Institute of Health, Bethesda, Md.) PB 99514

1. Public health - Bibliography.

PAPERS SUBMITTED FOR PUBLICATION AND PRESENTATION DURING THE FISCAL YEAR 1949. U. S. National Institute of Health, Bethesda, Md. n.d. 52p Mi $2.75 Ph $7.50. (Limited supply available free from National Institute of Health, Bethesda, Md.) PB 99515

1. Public health - Bibliography.

SEQUENCE OF CELLULAR RESPONSE TO INJURY IN MICE EXPOSED TO 1100 R TOTAL BODY X-RADIATION, by Jack Barrow and John L. Tullis. U. S. Naval Medical Research Institute, Bethesda, Md. Jul 1949. 45p photos, graphs, tables Mi $2.50 Ph $6.25. PB 99056

This is a study of the rate of appearance and the progress of the pathologic events resulting from exposure to ionizing radiation. Tables, microphotographs, and graphs are included. NMRI Proj NM 007039 R23.

STUDIES ON MICROORGANISMS OF THE UPPER ATMOSPHERE I. STUDIES ON LIQUID-IMPINGER AIR SAMPLING DEVICES, by Harry W. Dorris, Jr., Roland B. Mitchell, Philip W. Stumm, Durward E. Timmons. U. S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Oct 1949. 6p photos, tables Mi $1.25 Ph $1.25. PB 99415

A device was tested for taking air samples at various altitudes. The results show every type of glass baffle impinger tested to be inefficient at filtering carbon particles out of the air and probably are even less efficient for removing microorganisms. Bibliography and photographs attached. AAF SAM Proj 21-02-118 Rept. 1.

STUDIES ON MICROORGANISMS OF THE UPPER ATMOSPHERE. II. THE DEVELOPMENT OF A SOLUBLE COLLECTION FILTER FOR MICROORGANISMS PRESENT IN THE AIR, by Roland B. Mitchell, Philip W. Stumm, Harry W. Dorris, Durward E. Timmons. U. S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Oct 1949. 7p tables Mi $1.25 Ph $1.25. PB 99416

The report covers: (a) comparative studies of filters, and (b) development of a soluable gelatin-foam filter. Bibliography attached. AAF SAM Proj 21-02-118. Rept. 2.

STUDIES ON MICROORGANISMS OF THE UPPER ATMOSPHERE. III. THE EFFECT OF INCREASED AIR FLOW ON THE SURVIVAL OF MICROORGANISMS ON DRY, SOLUBLE, GELATIN-FOAM FILTERS, by Durward E. Timmons, Dorothy T. Anderson, Harry W. Dorris, Jr., Roland B. Mitchell. U. S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Oct 1949. 4p table Mi $1.25 Ph $1.25. PB 99417

Methods and results are discussed. Bibliography and table attached. AAF SAM Proj 21-02-118 Rept. 3.

## METALS AND METAL PRODUCTS

APPARATUS FOR THE PRODUCTION OF LARGE METALLIC CRYSTALS BY SOLIDIFICATION AT HIGH TEMPERATURES, by Louis Gold. U. S. Atomic Energy Commission. Sep 1948. 13p photo, drawing, graph Limited supply mimeo $.10. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10. PB 99239

Describes an apparatus consisting basically of a vacuum system, a furnace chamber, a furnace unit, the power supply and temperature control, and the crystal lowering and raising mechanism; operational procedure described in detail; figures; 26 references. AECD 2258.

ARCHIV FÜR DAS EISENHÜTTENWESSEN, JAHRGANG 16, HEFT 3, SEP 1942, P. 85-127. 86p photos, diagrs, graphs, tables (Text in German or English) Mi $3.75 Ph $11.25. PB 99166

The effect of chemical composition and heat treatment upon the magnetic properties of Fe-Ni-Co-Al-Cu alloys, free of or containing some titanium, is explained. Various technically valuable and economical alloy compositions are suggested for use in making permanent magnets of controlled properties by cooling in a magnetic field of at least 2000, but preferably 4000 or more oersted. Shapes of such permanent magnets are recommended. English translation of first article only. Contents:

Zumbusch, Wilhelm. Dauermagnete aus eisennickel-kobalt-aluminum-kupfer-(titan-) legierungen mit magnetischer vorzugslage. (Permanent magnets from iron, nickel, cobalt, aluminum, copper, (titanium) alloys with magnetic orientation), p. 101-112; Houdremont, Eduard, and Bandel, Gerhard. Der einfluss von titan auf die dauerstandfestigkeit von stählen. (Influence of titanium on the durability of steel), p. 85-100; Kornfeld, Heinz, and Hartleif, Gerhard. Zusammenhang zwischen ueberhitzungsemfindlichkeit und gehalt an aluminiumverbindungen bei weichem unlegiertem stahl. (Relationship between the overheating sensitivity and content of aluminum compounds in the case of soft unalloyed steel), p. 113-126; Kratschmar, Eduard. Arbeitszeit- und kostenstudien, dargestellt am beispiel des zuschneidens von blechen auf einer hydraulischen schere. (Work, time and cost studies as represented by hydraulic sheet metal cutting), p. 117-127. AAF T-2 T/1854.

BERICHT ÜBER SCHWEISSEN UND LÖTEN VON ZINK UND ZINKLEGIERUNGEN, (WELDING AND SOLDERING OF ZINC AND ZINC ALLOYS), by E. Knobloch. Metallgesellschaft A. G., Frankfurt am Main, Ger. May 1942. 22p photos, drawings, tables (Text in German) Mi $2.00 Ph $3.75. PB 98954
1. Zinc - Welding - Germany 2. Zinc alloys - Welding - Germany 3. Micro BIOS HEC 12285, Frames 1153-1174.
Enlargement print of Micro BIOS HEC 12285, Frames 1153-1174. This report will not reproduce well.

BERICHTE ÜBER VERSUCHE MIT VERSCHIEDENEN MISCH- UND KNETMASCHINEN. (TESTS WITH MIXING AND PUGGING MACHINES FOR HARD STEEL POWDERS). Studiengesellschaft Hartmetall, Berlin. 1936-1937. 17f photos (Text in German) Mi $1.75 Enl Pr $3.75. PB 96601
1. Steel - Machinability - Germany 2. Steel powders - Germany 3. Micro BIOS FD 3767/47, Frames 1-17 4. Micro BIOS HEC 11084, Frames 1-17.
Abstract in English.

BESUCH DER HERREN FEHSE UND DR. DAWIHL BEI DEN SIEMENS-SCHUCKERTWERKEN ZW. 7 AM 16 MAI 1935. BESUCH IM FLUGMOTORENWERK SIEMENS AM 1.8.35. BESPRECHUNG MIT HERRN DR. HINNÜBER ÜBER HARTMETALLFORSCHUNG AM 11.9. 1935. BESPRECHUNG ÜBER DEN ENTWURF ZU EINER RICHTWERTTAFEL FÜR STAHLBEARBEITUNG MIT HARTMETALL AM 18.9. 1936. Studiengesellschaft Hartmetall, Berlin. 1935-1936. 17f (Text in German) Mi $1.75 Enl Pr $3.75. PB 96600
1. Metals, Hard - Production - Germany 2. Micro BIOS HEC 11040 3. Micro BIOS HEC 11044 4. Micro BIOS HEC 11076 5. Micro BIOS FD 3752/47, Frames 1-16.

CHARACTERISTICS OF 16.5-MINUTE $Y^{94}$, by Leon J. Brown and Seymour Katcoff. U. S. Atomic Energy Commission. Los Alamos Scientific Laboratory. Aug 1948. 6p graphs Limited supply mimeo $.05. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.05. PB 99372
Re-determination of the half-life; description of procedure; results and graphs. AECD 2469. MDDC LADC 568.

DEGUSSA CORUNDUM BODIES FOR COILED TUNGSTEN WIRE FURNACES. Studiengesellschaft Hartmetall, Berlin. 1936. 4f drawing (Text in German) Mi $1.25 Enl Pr $2.50. PB 96611

1. Furnaces - Design - Germany 2. Corundum - Uses - Germany 3. Wire, Coiled - Germany 4. Deutsche Gold- und Silberscheideanstalt A. G., Frankfurt am Main, Ger. 5. Micro BIOS FD 3741/47, Frames 1-4 6. BIOS FR 925 LD.
Abstract available as PB 96611s. 1p. Mi $1.25 Ph $1.25.

DETERMINATION OF GAMMA RAY ENERGIES WITH THE MAGNETIC LENS SPECTROMETER, by Erling N. Jensen. Dec 1947. 70p drawings, graphs, tables Mi $3.00 Ph $8.75. (Limited supply mimeo $.25) (Also available from U. S. Atomic Energy Commission Oak Ridge, Tenn. Mimeo: $.25). PB 96962
Design and procedure for use of a thin magnetic lens, beta spectrometer for the indirect determination of the gamma-ray energies of $Zn^{65}$, $Co^{60}$, and $Se^{75}$; detailed analysis of experimental results; references. AECD 2399.

DIFFUSION COEFFICIENTS OF CARRIER-FREE FISSION PRODUCTS IN URANYL NITRATE AND ACID SOLUTIONS, by Jack Schubert and Eric C. Cohn. May 1944. 3p tables Mi $1.25 Ph $1.25. (Limited supply mimeo $.05). (Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.05). PB 97000
Diffusion coefficients of radiotracers from uranium fission were measured under conditions where the composition of the electrolyte in the upper and lower diaphragm cells was identical except for presence of radiotracer in the upper cell; general description of procedure; data. AECD 2377.

EFFECT OF BORON ON THE STRUCTURE AND SOME PHYSICAL PROPERTIES OF PLAIN CAST IRONS, by Alexander I. Krynitsky and Harry Stern. U. S. National Bureau of Standards. May 1949. 15p photos, graphs, tables Available from Supt. of Docs., U. S. Gov't. Printing Office, Washington 25, D. C. $.10. PB 99585
1. Boron - Effect on iron 2. Cast iron - Physical properties - Effect of boron 3. NBS RP 1987.

ERSATZ DES KOBALTMETALLS DURCH KOBALTOXYD IN HARTMETALL. ERSATZ DES KOBALTS IN NORMALEN HARTMETALL (PRODUCTION OF HARD METAL: SUBSTITUTION OF COBALT METAL BY COBALT OXIDE; SUBSTITUTION OF COBALT BY OTHER METALS OR COBALT-CONTAINING ALLOYS), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Dec 1934-May 1936. 8f (Text in German) Mi $1.25 Enl Pr $2.50. PB 96597
1. Metals, Hard - Production - Germany 2. Cobalt - Germany 3. Cobalt alloys - Germany 4. Cobalt oxide - Germany 5. Micro BIOS DOCS 2012/2904 6. Micro BIOS HEC 11034 7. Micro BIOS HEC 11063 8. FIAT FR 925 LD 9. Micro BIOS FD 3742/47, Frames 1-6.
Abstract in English.

GEFÜGEARTEN DER CO-W-LEGIERUNGEN BEI SINTERBEHANDLUNG (METHODS OF JOINING COBALT-TUNGSTEN ALLOYS BY SINTERING). Studiengesellschaft Hartmetall, Berlin. Jan 1939. 4f (Text in German) Mi $1.25 Enl Pr $2.50. PB 96843
1. Cobalt-tungsten alloys - Germany 2. Sintering - Germany 3. Micro BIOS FD 3802/47, Frames 1-3.

HERSTELLUNG VON KÖRPEN TANTALROID. (MASS PRODUCTION OF TANTALUM), by Dr. Dawihl and others. Studiengesellschaft Hartmetall, Berlin. May 1937. 2f (Text in German) Mi $1.25 Enl Pr $2.50. PB 96599
1. Tantalum - Production - Germany 2. Micro BIOS FD 3765/47, Frames 1-2.



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INVESTIGATION OF CREEP, FRACTURE, AND BENDING OF LEAD AND LEAD ALLOYS FOR CABLE SHEATHING-SERIES 1946, by Curtis W. Dollins. Illinois. University. Engineering Experiment Station. Jul 1948. 89p photos, drawings, graphs, tables Available from University of Illinois, Urbana, Ill. $.50. PB 99538

An investigation of creep, fracture and bending of lead and lead alloys for cable sheathing. The test results may be of interest to other users of lead such as various chemical industries using lead pipe for sulfuric acid, etc. Bulletin no. 378.

MAGNETIC SUSCEPTIBILITY OF BEO, by Clyde A. Hutchison. Feb 1948. 3p tables Mi $1.25 Ph $1.25. (Limited supply mimeo $.05) (Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.05) PB 96990

Experimental procedure and data calculated results for determination of the molal magnetic susceptibility of pure BeO powder, the Gouy method was used. AECD 2322.

NON-FERROUS METAL INDUSTRY IN GERMANY DURING THE PERIOD 1939-1945, by Leslie Aitchison and Voya Kondic. British Intelligence Objectives Sub-Committee. Nov 1949. 198p tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.90. PB 99807

1. Metals, Non-ferrous - Germany 2. Metal industries - Germany 3. BIOS OR 23.

NOTE ON THE RESEARCH PROGRAMME ON COATING OF SOFTER METALS WITH TUNGSTEN AND TUNGSTEN-CARBIDE OR HARD-METAL ALLOY (ÜBER DEN STAND DER VERSUCHE ZUM UBERZIEHEN VON WEICHEREN HARTMETALL MIT WOLFRAM UND WOLFRAMKARBID BETZ. HARTMETALLEGIERUNGEN), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Sep 1941. 3f (Text in German) Mi $1.25 Enl Pr $2.50. PB 96832

1. Metals - Coatings - Germany 2. Tungsten - Germany 3. Tungsten carbides - Germany 4. Micro BIOS HEC 11331, Frames 1-2 5. Micro BIOS FD 3895/47, Frames 1-2.

Abstract in English.

SPECTROCHEMICAL DETERMINATION OF BERYLLIUM, by L. T. Steadman. May 1948. 4p Mi $1.25 Ph $1.25. (Limited supply mimeo $.05) (Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10). PB 96976

A spectrochemical method is described for analyzing beryllium in source materials including ores, dusts, Be compounds, urines, and other biological materials. The Be may be separated by an alcohol-ether extraction procedure. An analytical measurement of the Be is made with the DC arc and a medium quartz spectrograph. AECD 1957.

TESTS OF NEW HARD METALS. Studiengeschellschaft Hartmetall, Berlin. 1933. 3f Mi $1.25 Ph $1.25. PB 96628

1. Metals, Hard - Tests 2. B90 (Hard metal) 3. B102 (Hard metal) 4. B103 (Hard metal) 5. Böhler, Gebr. & Co., A. G., Kapfenberg, Austria 6. Krupp, Friedrich A. G., Essen, Ger. 7. Micro BIOS FD 3730/47, Frames 1-4 8. BIOS FR 925 LD.

Abstract available as PB 96628s. 1p. Mi $1.25, Ph $1.25.

TESTS TO INTRODUCE HARD METALS N AND XX IN THE WE VE. Studiengesellschaft Hartmetall, Berlin. 1935. 4f (Text in German) Mi $1.25 Enl Pr $2.50. PB 96608

1. Steel, Cutting - Germany 2. Tools, Cutting - Germany 3. Micro BIOS FD 3735/47, Frames 1-4 4. BIOS FR 925 LD.
Abstract available as PB 96608s. 1p. Mi $1.25 Ph $1.25.

ÜBER DIE ABTRENNUNG DER MAHLFLÜSSIGKEIT VON HARTMETALLPULVER DURCH ABSCHLEUDERN (SEPARATION OF THE GRINDING LIQUID FROM HARD METAL POWDER BY CENTRIFUGING), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Jan 1937. 5f (Text in German) Mi $1.25 Enl Pr $2.50. PB 96796
1. Centrifugal force - Germany 2. Metal powders - Germany 3. Micro BIOS HEC 11,085, Frames 1-4 4. Micro BIOS FD 3758/47, Frames 1-4.

ÜBER DIE HERSTELLUNG VON VANADINKARBID AUS VANADINSÄURE (PRODUCTION OF VANADIUM CARBIDE FROM VANADIC ACID). Studiengesellschaft Hartmetall, Berlin. Dec 1937. 4f table (Text in German) Mi $1.25 Enl Pr $2.50. PB 96817
1. Vanadium carbides - Production - Germany 2. Vanadic acid - Germany 3. Micro BIOS HEC 11,120, Frames 1-3 4. Micro FIAT FD 4004/47, Frames 1-3.

ÜBER ZUSAMMENHÄNGE ZWISCHEN DEN HERSTELLUNGSVERFAHREN VON EISENPULVERN UND DEN EIGENSCHAFTEN DER SINTERKÖRPER, VON W. DAWIHL UND U. SCHMIDT. (ON THE RELATION BETWEEN THE MANUFACTURE OF IRON POWDERS AND THE PROPERTIES OF IRON SINTER BODIES). Studiengesellschaft Hartmetall, Berlin. n.d. 45f (Text in German) Mi $2.50 Enl Pr $6.25. PB 96787
1. Iron powders - Manufacture - Germany 2. Micro BIOS FD 3718/47, Frames 1-44.

UEBER UMWANDLUNGSERSCHEINUNGEN UND DEN ZUSTAND DES GESÄTTIGTEN WOLFRAMKARBIDES IM HARTMETALL (TRANSFORMATION EFFECTS AND THE STATE OF SATURATED TUNGSTEN CARBIDE IN HARD METAL), by Flüshöh, Schmidt, and Dawihl. Studiengesellschaft Hartmetall, Berlin. Mar 1939. 16f photos, tables (Text in German) Mi $1.75 Enl Pr $3.75. PB 96812
1. Tungsten carbides - Germany 2. Metals, Hard - Tungsten carbide content - Germany 3. BIOS FD 925 LD 4. Micro BIOS HEC 11175 5. Micro BIOS DOCS/2012/2984 6. Micro BIOS FD 3808/47, Frames 1-15.
Abstract in English.

UNTERSUCHUNG VON WIDIA N AUS DER FABRIKATION VON KRUPP (EXAMINATION OF WIDIA N MADE BY KRUPP), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Mar 1935. 2f (Text in German) Mi $1.25 Enl Pr $2.50. PB 96803
1. Widia N (Trade name) 2. Micro BIOS HEC 11,036 3. Micro BIOS FD 3733/47, Frames 1-2.

ZIRCONIUM IN MAGNESIUM, by Hubert Altwicker. 1948. 26f drawings, graphs, tables Mi $2.25 Enl Pr $6.25. PB 99848
1. I. G. Farbenindustrie A. G., Bitterfeld, Ger. 2. Magnesium-zirconium alloys - Germany 3. U. S. Air Materiel Command, Wright Field, Dayton, Ohio 4. AAF T-2 T/1185 5. Micro BIOS FD 1829/49, Frames 1-22.
Project HQ-310. Abstract available as PB 99848s. 1p. Mi $1.25 Ph $1.25.

ZUSAMMENSETZUNG UND EINFLUSS DER OFENATMOSPHÄRE AUF DIE EIGENSCHAFTEN DES HARTMETALLS (COMPOSITION AND INFLUENCE OF FURNACE

ATMOSPHERE ON PROPERTIES OF HARD METALS I AND II ("WIDIA N" AND "WIDIA X"). Studiengesellschaft Hartmetall, Berlin. Aug-Oct 1934. 9f (Text in German) Mi $1.25 Enl Pr $2.50. PB 96618
1. Widia N 2. Widia X 3. Metals, Hard - Physical properties - Germany 4. Furnaces, Metallurgical - Germany 5. Hydrogen - Purification - Germany 6. Micro BIOS FD 3732/47, Frames 1-7.
Abstract in English.

## NERALS AND MINERAL PRODUCTS

DEVELOPMENT OF A STRUCTURAL CLAY PRODUCTS INDUSTRY USING FLORIDA CLAYS. PART I. DEVELOPMENT IN THE JACKSONVILLE AREA, by A. F. Greaves-Walker, P. P. Turner, R. S. Hagerman. Florida. University. College of Engineering. Engineering and Industrial Experiment Station, Gainsville, Fla. Dec 1949. 48p photo, map, graphs, tables Available from University of Florida. College of Engineering, Gainsville, Fla. $.50. PB 99637
This bulletin is particularly timely, because only a small percentage of the structural clay products used in Florida are manufactured in the state. The study covers not only the sources of raw materials and analyses and tests of those materials but it also includes an evaluation of the finished products together with manufacturing cost data. It clearly demonstrates that a structural clay products industry, located in the northeastern portion of the state, could be a thriving enterprise. Bulletin no. 30. Engineering Progress at the University of Florida, Vol. III, no. 10, Dec 1949.

INVESTIGATIONS OF RARE EARTH PROBLEMS, QUARTERLY PROGRESS REPORT NO. 10, SEP 1-DEC 1, 1948. Illinois. University, Bloomington, Ill. Dec 1948. 48p graphs, tables Mi $2.50 Ph $6.25. PB 99401
The absorption spectra of solutions of erbium perchlorate, neodymium perchlorate, and ytterbium perchlorate are presented. In addition, data on erbium perchlorate and its adherence to Beer's Law has been included. It is shown that under the proper conditions Beer's Law is obeyed. N6 ori-71, Chemistry task no. VII.

PHOSPHORESCENCE AND PHOSPHORESCENT SULFIDES - BIBLIOGRAPHY. SPECIAL REPORT. DuPont de Nemours, E. I., Co., Inc., Pigments Dept., Newport, Del. Feb 1948. 35p Mi $2.25 Ph $5.00. PB 99705
Bibliography covers theory and applications, U. S. and foreign patents with industry included. Gleamed from Chemical Abstracts, 1940-1947. Abstracts occasionally given, especially, for infra-red phosphors. Contract no. W35-039-sc-32256. TL-S-48-48H.

SHIPPING, STORAGE AND HANDLING OF COBALT 60, by K. J. Parry. National Research Council of Canada. Division of Physics. Industrial Radiology Laboratory. n.d. 19p drawings, graphs, tables Mi $1.75 Ph $2.50. PB 99698
A summary of information is presented. NRCC 2026. NRCC PR-12.

USE OF COBALT 60 FOR INDUSTRIAL RADIOGRAPHY, by A. Morrison. National Research Council of Canada. Division of Physics. Industrial Radiology Laboratory. n.d. 33p photos, diagrs, drawings, graphs, tables Mi $2.25 Ph $5.00. PB 99696
The use of cobalt-60 as a substitute for radium in the radiography of castings,

forgings, etc. is described. The low cost of cobalt-60 in comparison to radium should make this report of interest to industry. NRCC 2010. NRCC PR-8.

## PHOTOGRAPHIC AND OPTICAL GOODS

DUPLICATION OF AERIAL NEGATIVES, BY S. J. FRIEDMAN. U. S. ARMY. CORPS OF ENGINEERS. ENGINEER RESEARCH AND DEVELOPMENT LABORATORIES, FORT BELVOIR, VA. PROJECT 8-35-01-001. Aug 1948. 51p diagrs, graphs, tables Mi $2.75 Ph $7.50. PB 99513

This report covers an investigation to determine the feasibility of producing, from aerial negatives, duplicates that are as satisfactory for all mapping purposes as the originals to ascertain the minimum requirements for duplicate aerial negatives suitable for all mapping purposes; and to furnish ideas or suggestions which could be employed to meet the minimum requirements. ERDL R1059.

MANUFACTURING PROCESSES OF VARIOUS COMPONENTS, INTERMEDIATES, ETC., RELATING TO THE PHOTOGRAPHIC INDUSTRY. I. G. Farbenindustrie A. G., Höchst, Ger. 1939-1945. 32f (Text in German) Mi $2.25 Enl Pr $6.25. PB 99465

1. Photographic industry - Germany 2. Photographic emulsions - Manufacture - Germany 3. Photographic papers - Manufacture - Germany 4. Hydrazine, Phenyl - Production - Germany 5. Parazol (Trade name) 6. Patrol (Trade name) 7. Micro BIOS FD 3693/47, Frames 1-32.

See also BIOS FR 658 (PB 75852). Abstracts available as PB 99465s. 1p. Mi $1.25 Ph $1.25.

PRODUCTION OF PHOTOGRAPHIC PREPARATIONS AND DRAWINGS OF EQUIPMENT CONNECTED WITH MANUFACTURE. Aktien Gesellschaft für Anilin Fabrik. Filmfabrik, Wolfen, Ger. 1939-1946. 318f drawings (Text in German) Mi $9.00 Enl Pr $42.50. PB 99463

1. Photographic equipment - Manufacture - Germany 2. Photography, Color - Germany 3. Films (Photography) - Manufacture - Germany 4. Films (Photography), Color - Emulsions - Germany 5. Micro BIOS FD 2578/46, Frames 1-318.

Abstract in English.

DER RAUMFILM UND SEINE EINFLÜHRUNG IN DEN LICHTSPIELTHEATER BETRIEB (THE TRIDIMENSIONAL FILM AND ITS INTRODUCTION INTO THE CINEMA INDUSTRY), by Erwin Käsemann. Jan 1946. 22f (Text in German) Mi $2.00 Enl Pr $5.00. PB 99464

1. Films (Photography) - Motion picture - Germany 2. Films (Photography), Three-dimensional - Germany 3. Micro BIOS FD 3214/46, Frames 1-22.

Abstract in English. Abstracts available as PB 99464s. 2p. Mi $1.25, Ph $1.25.

## PHYSICS

### Nuclear

BETA-SPECTRUM OF $A^{41}$, by H. Brown and V. Perez-Mendez. U. S. Atomic Energy Commission. Feb 1949. 4p graph Limited supply mimeo $.05. Also

available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.05. PB 99375

Procedure and results using a magnetic semicircular focusing beta spectrometer with source consisting of a gas in a container; $A^{41}$ was produced by bombardment of $A^{40}$ in the cyclotron, using a gas probe; graph. MDDC CUD 19. AECD 2490.

CRYSTAL STRUCTURE OF ALPHA-PHASE COMPOUNDS $A_2XF_6$ and $AXF_4$, by W. H. Zachariasen. U. S. Atomic Energy Commission. Argonne National Laboratory. Jan 1948. 5p tables Limited supply mimeo $.05. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.05. PB 99362

It is shown that the compounds $K_2ThF_6$, $K_2UF_6$, $KLaF_4$, $KCeF_4$, $Na_2ThF_6$, and $Na_2UF_6$ have cubic modifications with the fluorite type of structure. The unit cube thus contains 4/3 molecule $A_2XF_6$ or two molecules AXF4 with the A and X atoms distributed at random over the metal sites of the fluorite type of structure. MDDC ANL 4105. AECD 2162.

EQUATIONS OF STATE OF ELEMENTS BASED ON THE GENERALIZED FERMI-THOMAS THEORY, by R. P. Feynman, N. Metropolis and E. Teller. U. S. Atomic Energy Commission. Los Alamos Scientific Laboratory. Jan 1949. 42p tables Limited supply mimeo $.20. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.20. PB 99380

The Fermi-Thomas statistical model of the atom was used to derive the equation of state of matter at high pressures and at various temperatures; calculations were carried out with and without the exchange terms; discussion of similarity transformations lead to the virial theorem and to correlation of solutions for different Z-values. MDDC LADC 553. AECD 2448.

EXPERIMENTS ON THE EFFECT OF ATOMIC ELECTRONS ON THE DECAY CONSTANT OF $BE^7$, by E. Segre and C. E. Wiegand. U. S. Atomic Energy Commission. Jun 1948. 8p drawing, graph, table Limited supply mimeo $.10. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10. PB 99360

Measurement of radioactive decay constant of Be-7 in the metallic state and in the oxide form to determining the possible influence of the electron configuration; difference between the disintegration rates found to be very small; description of procedure and equipment; data; method of measuring mean lives of radioactive substances. MDDC URCL 137. AECD 2199.

HIGH ENERGY ALPHA PARTICLES ASSOCIATED WITH FISSION, by E. O. Wellan, Charles D. Moak and R. S. Sawyer. U. S. Atomic Energy Commission. Argonne National Laboratory. Apr 1947. 7p photos, graphs, tables Limited supply mimeo $.10, Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10. PB 99346

Method described for measuring high energy alpha particles by using a photographic plate which were soaked in a saturated water solution of uranyl acetate and then exposed in the Clinton pile for 1-2 seconds. Experimental results are given. MDDC 875.

LIGHT ABSORPTION OF SOLUTIONS OF THE TRIVALENT IONS OF THE LANTHANIDE AND ACTINIDE RARE EARTHS, I. LIGHTER LANTHANIDE ELEMENTS IN AQUEOUS PERCHLORIC ACID, by D. C. Stewart. U. S. Atomic Energy Commission.

Sep 1948. 32p graphs, tables Limited supply mimeo $.15. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.15. PB 99381

Determination of the absorption spectra of the perchlorates of the lighter rare earths (lanthanum through terbium, with exception of promethium) in aqueous solution using a Beckman quartz prism DU spectrophotometer; data compared with that available from the literature and presented graphically; procedure described; references. MDDC UCRL 182. AECD 2389.

ON THE INVERSE REACTIONS $H^3(P,N)HE^3$ AND $HE^3(N,P)H^3$, by Louis Goldstein. U. S. Atomic Energy Commission. Los Alamos Scientific Laboratory. Dec 1947. 12p diagrs Limited supply mimeo $.10. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10. PB 99313

It is shown that these two reactions, at corresponding energies, may be of interest in the experimental verification of the general quantum mechanical cross-section ratio formula; some properties of the $He^4$ nuclei are described; it is shown that capture of slow protons and neutrons is in principle possible by the H3 and He3 nuclei. MDDC LADC 539. AECD 2222.

RANGE MEASUREMENTS OF 200 MEV DEUTERONS IN VARIOUS MATERIALS, by Walter J. Stephan and R. L. Thornton. U. S. Atomic Energy Commission. Oct 1949. 7p drawing, graph, table Limited supply mimeo $.10. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10. PB 99338

The range in aluminum of the deuterons accelerated by the 184-inch cyclotron has been measured. The energy deduced from range-energy curves is 196 Mev which is in excellent agreement with the expected value. Range measurements at the same energy have also been made for Be, C, Cu, Mo, Ag, Sn, Pb, and U. Approximate measurements of the energy loss per cm path have also been made for these materials relative to aluminum. MDDC BP 147. AECD 2147.

STUDY OF THE INTERACTION OF PROTONS WITH TRITIUM, by R. F. Taschek and H. T. Gittings. U. S. Atomic Energy Commission. Los Alamos Scientific Laboratory. Aug 1948. 12p drawings, graphs Limited supply mimeo $.10. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10. PB 99359

Preliminary measurements of the scattering cross section of tritium for protons and the reaction cross section for $T^3(p,n)He^3$ were made; describes a method of analysis for hydrogen in tritium samples and a gas handling system; discusses use of the reaction as a neutron source; angular distributions for scattering and cross sections are given. MDDC LADC 570. AECD 2352.

USE AND CALIBRATION OF A 100% GEOMETRY ION CHAMBER, by J. W. Jones and R. T. Overman. U. S. Atomic Energy Commission. Oak Ridge National Laboratory. Mar 1948. 16p graphs, tables Limited supply mimeo $.10. Also available from U. S. Atomic Energy Commission, Oak Ridge, Tenn. Mimeo: $.10. PB 99347

Describes a high pressure, gamma, ion chamber with approximately 100% geometry and calibrated for a wide range of gamma energies and source intensities; stability and accuracy are discussed; operating instructions; experimental readings were made on samples of known disintegration rate and the data analyzed. MDDC MonP 399. AECD 2367.

CORRESPONDENCE RELATING TO OPPANOL AND BUNA. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1940-1943. 13f (Text in German) Mi $1.75 Enl Pr $3.75. PB 99811

1. Oppanol - Germany 2. Rubber, Buna - Germany 3. Micro BIOS FD 588/48, Frames 532-543.

MONORADICAL AND DIRADICAL POLYMERIZATION OF STYRENE, by D. H. Johnson, A. Escoruela and A. V. Tobolsky. Princeton University. Plastics Laboratory. May 1949. 18p graphs, tables Mi $1.75 Ph $2.50. PB 99437

Equations have been developed relating the degree and rate of styrene polymerizations initiated by monoradicals and diradicals. It has been shown that on plotting $1/P_n$ vs. rate for the two schemes, straight lines should be obtained with common intercept and differing in slope by a factor of $2+\frac{k_c}{k_d}$.

The experimental points for a plot of $1/\overline{P}_n$ vs. rate for monoradical catalysts, thermal, and photo polymerization have been observed to define one straight line. PU PL TR 14A.

MINUTES OF THE FIRST MEETING OF THE COMMITTEE FOR THE TECHNICAL APPLICATION OF RUBBER (KAUTECKO) MAY 4, 1939. I. G. Farbenindustrie A. G., Leverkusen, Ger. 1939. 14f (Text in German) Mi $1.75 Enl Pr $3.75. PB 99808

1. Rubber, Synthetic - Production - Germany 2. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 3. Micro BIOS FD 1412/48, Frames 1-13.
Abstract in English.

MINUTES OF THE SECOND MEETING OF THE COMMITTEE FOR THE TECHNICAL APPLICATION OF RUBBER (KAUTECKO) JULY 14, 1939. I. G. Farbenindustrie A. G., Leverkusen, Ger. 1939. 14f (Text in German) Mi $1.75 Enl Pr $3.75. PB 99805

1. Rubber, Synthetic - Production - Germany 2. Buna S (Trade name) 3. Buna SS (Trade name) 4. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 5. Micro BIOS FD 1413/48, Frames 1-13.

MINUTES OF THE 3RD MEETING OF THE COMMITTEE FOR THE TECHNICAL APPLICATION OF RUBBER (KAUTECKO) NOVEMBER 16TH, 1939. I. G. Farbenindustrie A. G., Leverkusen, Ger. 1939. 14f (Text in German) Mi $1.75 Enl Pr $3.75. PB 99809

1. Rubber, Synthetic - Production - Germany 2. Buna S (Trade name) 3. Buna SS (Trade name) 4. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 5. Micro BIOS FD 1414/48, Frames 1-12.
Abstract in English.

MINUTES OF MEETING OF SYNTHETIC RUBBER COMMITTEE (11TH KAUTEKO MEETING). I. G. Farbenindustrie A. G., Leverkusen, Ger. Jun 1944. 39f tables (Text in German) Mi $2.25 Enl Pr $6.25. PB 99817

1. Rubber, Buna - Production - Germany 2. Rubber, Synthetic - Production - Germany 3. Buna S3 (Trade name) 4. Buna S4 (Trade name) 5. Desmodur R (Trade name) 6. Kauteko (Anwendungstechnische Kommission für Kautschuk) 7. Micro BIOS FD 3452/46, Frames 68-104.
Abstract available as PB 99818s. 1p. Mi $1.25, Ph $1.25.

PREPARATION AND VULCANIZATION OF LIQUID POLYISOPRENE POLYMERS, by Y. Conwell, G. F. Roeser, and A. V. Tobolsky. Princeton University. Plastics Laboratory. Sep 1948. 16p tables Mi $1.75 Ph $2.50. PB 99435
Data on molecular weight as a function of monomer/modifier charge ratio and conversion are presented for the system, isoprene, dodecyl mercaptan, t-butyl hydroperoxide. Density and viscosity data are given for various molecular weights. Finally various vulcanization receipes are discussed. May not reproduce well. PU PL TR 11A.

STUDY OF THE AGING PROPERTIES OF VULCANIZATES AND THE EFFECT OF POLYMERIZATION INHIBITORS AND AN INVESTIGATION OF EFFECTIVE ACTIVATORS FOR THIAZOLE ACCELERATORS AND OTHER GUANIDINE DERIVATIVES, by Chee-Wen Yu. Jun 1947. 98p graphs, tables Mi $4.25 Ph $12.50. PB 99779
The aging properties of a typical gum stock subjected to accelerated aging in air were investigated. Suitable activators for the thiazole accelerators were analyzed. The swelling properties of the aged base stock and the phenyl-B-naphthylamine protected stock were compared.

TRANSITION SPEED OF EMULSIFIED AND DISPERSED SUBSTANCES ONTO DISPERSED RUBBER. I. G. Farbenindustrie A. G., Leverkusen, Ger. Feb 1943. 15f graphs, tables (Text in German) Mi $1.75 Enl Pr $3.75. PB 99845
1. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 2. Rubber, Buna - Stabilization - Germany 3. Micro BIOS FD 1367/48, Frames 1-13.
Abstract in English. Same abstract is PB 99845s. 2p. Mi $1.25, Ph $1.25.

VULCANIZATION OF POLYCHLOROPRENE: STUDIES ON THE FORMATION OF GEL, by Bruce Wright Duke. Jun 1947. 65p graphs, tables Mi $3.00 Ph $8.75. PB 99765
The conversion from linear macromolecules to gel, which characterizes vulcanization reactions, was studied for the case of polychloroprene to gain information of its heat cure. The mechanism of vulcanization consists of free radicals cross-linking between the polymer molecules at carbon atoms - to the double bond in the case of natural rubber and polychloroprene. Zinc oxide is best curing agent for polychloroprene. Thesis-University of Akron, Akron, Chio.

## STRUCTURAL ENGINEERING

BLAST-DRIVEN ANCHORAGES AND PILING, by W. Dixon Smith. U. S. Engineer Board. Feb 1946. 25p photos, drawings, tables Mi $2.00 Ph $3.75. PB 99472
This report covers the use of the blast-driven earth rod equipment and principle in military bridging operations as a means of driving anchorages and piling, removing anchor posts, projecting anchor cables, and clearing bridge approaches. ENG EB Rept 970. ENG EB Proj BRS 563.

BUILDING IN BRITAIN TODAY. Gt. Brit. Ministry of Works and Gt. Brit. Central Office of Information. 1949. 20p photos Available from British Information Services 30 Rockefeller Plaza. New York 20. N. Y. $.20. PB 99534

BYGGNADSINDUSTRINS RATIONALISERUNG (RATIONALIZATION IN THE BUILDING INDUSTRY, A SUMMARY) by Sture Haag. Sweden Statens Kommittee für Byggnadsforskning. 1948 34p drawings (Text in Swedish) Mi $2.25 Ph $5 00. PB 98998

Rapport nr 15. Summary in English.

DAYLIGHT INVESTIGATION, DESCRIPTION OF TEST SET-UP AND RESULTS OF SELECTED TEST SERIES. by Gunnar Pleijel. Sweden. Statens Kommittee för Byggnadsforskning. 1949. 70p photos, drawings graphs tables Mi $3.00 Ph $8.75. PB 99073

The main purpose of the tests dealt with in this paper was to elucidate those aspects of daylighting problems which are connected with the influence of architectural factors on natural lighting in rooms. The principal factors considered are spacing and height of houses, height, width and design of windows, dimensions and colors of rooms and color of ground surface. Report no. 17.

DESIGN OF FLAT CONCRETE ROOFS IN RELATION TO THERMAL EFFECTS. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station Watford, England. Nov 1949. 6p diagrs tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. PB 99703

A discussion of the main points which should be taken into account when designing flat concrete roofs, so as to reduce thermal expansion and contraction and keep a building cool in summer, and conserve heat and avoid condensation in winter. Problems of structural strength and of moisture exclusion are not discussed. Building Research Station Digest no. 12.

DET PLANA TAKETS PROBLEM (FLAT ROOF PROBLEMS, DISCUSSION AND BIBLIOGRAPHY), by Olle Gewalt and Gösta Lundin. Sweden. Statens Kommittee för Byggnadsforskning. 1949. 100p photos, drawings (Text in Swedish) Mi $4.25 Ph $12.50. PB 98999

1. Roofs, Flat - Sweden 2. Roofs, Flat - Bibliography.

PLASTIC BUCKLING OF A LONG FLAT PLATE UNDER COMBINED SHEAR AND LONGITUDINAL COMPRESSION by Elbridge Z. Stowell. U. S. Langley Aeronautical Laboratory, Langley Air Force Base, Va. Dec 1949. 17p graphs Mi $1.75 Ph $2.50. PB 99577

The condition for plastic buckling of a long flat plate under combined shear and longitudinal compression is obtained by a simple extension of the theory of plastic buckling that applies when the loads are applied separately. Results are presented in the form of interaction curves. NACA TN 1990.

STABILITY OF ALCLAD PLATES, by Kenneth P. Buchert. U. S. Langley Aeronautical Laboratory, Landley Air Force Base, Va. Dec 1949. 33p Mi $2.25 Ph $5.00. PB 99518

On the basis of plasticity theory a theoretical solution for the buckling of Alclad plates has been developed. Both the differential equation of equilibrium of the buckled plate and the energy expression are derived. Results are presented for the

buckling of long simply supported plates under longitudinal compression and under shear, and for a plate-column. Theoretical and experimental results are compared for a simply supported plate in compression and for strip columns. NACA TN 1986.

STRESSES IN AND GENERAL INSTABILITY OF MONOCOQUE CYLINDERS WITH CUTOUTS. VIII. CALCULATION OF THE BUCKLING LOAD OF CYLINDERS WITH LONG SYMMETRIC CUTOUT SUBJECTED TO PURE BENDING, by N. J. Hoff, Burno A. Boley and Merven W. Mandel. Polytechnic Institute of Brooklyn, Brooklyn, N. Y. Oct 1949. 36p diagrs, graphs, tables Mi $2.25 Ph $5.00. PB 99038

A strain-energy theory similar to one developed earlier at PIBAL was established for the calculation of the buckling load in pure bending of reinforced monocoque cylinders which have a symmetric cutout on the compression side and buckle according to general-instability patterns. The difference between the present and earlier theories is the use of the axial wave length as an additional parameter whose value was determined from a minimum condition. NACA TN 1963.

TRAVI METALLICHE INFLESSE IN REGIME ELASTO-PLASTICO. (METAL BEAMS UNDER BENDING LOAD WITHIN THE PLASTIC-ELASTIC RANGE) by Enricho Volterra. Aug 1949. 71p diagrs, graphs, tables Mi $3.50 Ph $10.00. PB 99047

The principal results of experimental research made on freely supported metal beams and on continuous metal beams on level supports loaded in the plastic-elastic zone, are reported as calculated by the author in the Laboratory of Engineering, Cambridge University. STS 69.

## TEXTILES AND TEXTILE PRODUCTS

CORRELATION OF SIMULATED RAINFALL TESTS WITH LABORATORY PENETRATION TESTS, by M. I. Landsberg, Roger Kelly, and Dorothy Sinski. U. S. Office of the Quartermaster General. Military and Planning Division. Research and Development Branch. Sep 1949. 24p photo, graphs, tables Mi $2.00 Ph $3.75 Mimeo: $.75. PB 99531

A correlation has been established between the results of rain-room tests on garments and swatches and the results of the following laboratory tests: drop-penetration, duPont rain test, Budesmann, and hydrostatic pressure. Experimental procedure, results and discussion, and conclusions are given. Tables and graphs are included. Bibliography attached. QMC TSR 51.

EFFECT OF TENSION ON THE POROSITY OF A PARACHUTE FABRIC, by W. D. Brown. Gt. Brit. Ministry of Supply. Aeronautical Research Council. 1949. 10p photos, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50. PB 99706

Experiments were made with the fabric pulled along both warp and weft while its porosity was measured at pressures of 5 and 10 inches of water. A number of fabrics was tested covering various types of weave. Table, graphs and photographs are attached. ARC RM 2325.

EXHIBITION OF VINYLON TEXTILES. Kurashiki Rayon Co., Ltd., Osaka, Japan. Nov 1949. 6p diagr, table Mi $1.25 Ph $1.25. PB 99657

1. Fibers, Synthetic - Japan 2. Rayon fibers - Fabrication - Japan 3. Vinylon (Synthetic fiber) 4. Textiles, Synthetic - Manufacture - Japan.

FABRIC RESEARCH: ACCELERATED AGEING OF FABRIC, BY J. MAAS. U. S. NAVAL CLOTHING DEPT., BROOKLYN, N. Y. PROJECT NO. JRDB NT001003. May 1949. 56p drawings, graphs, tables Mi $2.75 Ph $7.50. PB 99400

The variable factors making up "weather" were separately analyzed as to their effect on the deterioration of cotton goods. Storage and exposure were considered separately. Some unexpected findings resulted. NCD RP JRDB NT001003.

LITERATURE AND PATENT SURVEY ON CREASING AND CREASE-RESISTANCE OF TEXTILES, by Francis D. Horigan and Cary R. Sage. U. S. Office of the Quartermaster General. Military Planning Division. Research and Development Laboratories. Technical Library. Sep 1949. 55p Mi $2.75 Ph $7.50 Mimeo: $1.50. PB 99429

1. Crease resisting agents - Bibliography 2. Crease resisting agents - Patents - Bibliography 3. Textiles - Crease resistance - Patents - Bibliography 4. Fabrics - Crease resistance - Bibliography 5. Fabrics - Crease resistance - Patents - Bibliography 6. QMC TL BS 6.

LITERATURE SURVEY ON WATERPROOFING AND WATER-REPELLENCY OF TEXTILES, by Francis D. Horigan and Cary R. Sage. Sep 1949. 33p Mi $2.25 Ph $5.00 Mimeo: $1.00. PB 98016s

1. Textiles - Waterproofing - Bibliography 2. U. S. Office of the Quartermaster General. Military Planning Division. Research and Development Laboratories. Technical Library 3. QMC TL BS 8.

Supplement no. 1 to PB 98016.

ON THE DEVELOPMENT OF POLYVINYL SYNTHETIC FIBER, by T. Tomonari. Kurashiki Rayon Co., Ltd., Osaka, Japan. Feb 1949. 17p diagr, tables Mi $1.75 Ph $2.50. PB 99658

1. Fibers, Synthetic - Japan 2. Rayon fibers - Fabrication - Japan 3. Vinylon (Synthetic fiber) 4. Textiles, Synthetic - Manufacture - Japan 5. Japan Synthetic Textile Association.

Read at the lecture meeting of Kansai Branch of Textile Society on Feb 19, 1949.

TEXTILES AND THEIR TESTING. Gt. Brit. Ministry of Supply. 1949. 90p photos, drawings, graphs, tables Available from the British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.40. PB 99702

1. Textiles - Testing - Gt. Brit.

Selected Government Research Reports. Vol. 4. Each chapter is separately abstracted.

## TRANSPORTATION EQUIPMENT

### Aeronautics

### Aircraft

ANALYSIS OF MEANS OF IMPROVING THE UNCONTROLLED LATER MOTIONS OF PERSONAL AIRPLANES, by Marion O. McKinney, Jr. U. S. Langley Aeronautical Laboratory, Langley Field, Va. Dec 1949. 28p drawings, graphs, tables Mi $2.00 Ph $3.75. PB 99562

A theoretical analysis of means of improving the uncontrolled lateral motions of personal airplanes is presented. The purpose of this analysis was to determine whether such airplanes could be made capable of flying uncontrolled for an indefinite period of time without getting into a dangerous attitude and for a reasonable period of time without deviating excessively from the original course. NACA TN 1997.

ANALYSIS OF SUPERSONIC AERODYNAMIC HEATING WITH CONTINUOUS FLUID INJECTION, by E. B. Klunker and H. Reese Ivey. U. S. Langley Aeronautical Laboratory, Langley Field, Va. Dec 1949. 31p graphs Mi $2.25 Ph $5.00. PB 99448

An analysis of the steady-state aerodynamic heating problem at high-supersonic speeds for laminar flows with no pressure gradient shows that the aero-dynamic heating is reduced substantially by injecting a small quantity of coolant into the boundary layer. Consideration of the boundary-layer stability indicates that the laminar boundary layer may be maintained at high-supersonic speeds and high Reynolds numbers even with fluid injections. NACA TN 1987.

EFFECT OF FOREBODY WARP AND INCREASE IN AFTERBODY LENGTH ON THE HYDRODYNAMIC QUALITIES OF A FLYING-BOAT HULL OF HIGH LENGTH-BEAM RATIO, by Walter J. Kapryan. U. S. Langley Aeronautical Laboratory, Langley Air Force Base, Va. Nov 1949. 31p photos, drawings, graphs, table Mi $2.25 Ph $5.00. PB 99304

An investigation has been made to determine the combined effect of a warped forebody and an extended afterbody on the hydrodynamic qualities of a flying boat with a hull having a basic length-beam ratio of 15. The longitudinal stability during take-off and landing and spray characteristics were determined in smooth water. The landing behavior in waves was also determined. NACA TN 1980.

EXPERIMENTS ON AN NACA 23021 AEROFOIL WITH A 15 PER CENT. HANDLEY PAGE SLOTTED FLAP IN THE COMPRESSED AIR TUNNEL, by D. H. Williams and A. F. Brown. Gt. Brit. Aeronautical Research Council. 1949. 15p drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.00. PB 99536

An aerofoil of section NACA 23021 has been tested with a 15 per cent Handley Page slotted flap at 0,30,40,60,70 and 80 deg. Tests were made at three flap angles after removal of a small lip at the entrance to the slot and further tests at three flap angles with the gap between aerofoil and flap blocked. The only effect of removing the lip is a 5 per cent. increase in profile drag with flap at 0 deg. At the other flap angles there is no effect. ARC RM 2305.

FLIGHT INVESTIGATION ON A FIGHTER-TYPE AIRPLANE OF FACTORS WHICH AFFECT THE LOADS AND LOAD DISTRIBUTIONS ON THE VERTICAL TAIL SURFACES DURING RUDDER KICKS AND FISHTAILS, by John Boshar. U. S. Langley Aeronautical Laboratory, Langley Field, Va. 1947. 50p photos, graphs, tables Available from the Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.30. PB 99561

An analysis is made of the data obtained in steady flight, rudder kicks, and fishtail maneuvers. For the rudder kicks the significant loads were the "deflection load" resulting from an abrupt control deflection and the "dynamic load" consist-

ing of a load corresponding to the new static equilibrium condition for the rudder deflected plus a load due to a transient overshoot. NACA 885.

AN INTRODUCTION TO THE PHYSICAL ASPECTS OF HELICOPTER STABILITY, by Alfred Gessow and Kenneth B. Amer. U. S. Langley Aeronautical Laboratory, Langley Field, Va. Nov 1949. 35p drawings, graphs Mi $2.25 Ph $5.00. PB 99523

An explanation is made of both the static stability and the stick-fixed oscillation in hovering and forward flight in terms of fundamental physical quantities. Three significant stability factors - static stability with angle of attack, static stability with speed, and damping due to a pitching or rolling velocity - are explained in detail. NACA TN 1982.

INVESTIGATIONS OF EFFECTS OF SURFACE TEMPERATURE AND SINGLE ROUGHNESS ELEMENTS ON BOUNDARY-LAYER TRANSITION, by Hans Liepmann and Gertrude H. Fila. California Institute of Technology, Pasadena, Calif. 1947. 16p photos, drawings, graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.15. PB 98906

1. Boundary layer, Laminar - Temperature distribution 2. Boundary layer, Tubulent - Flow 3. Boundary layer - Transition point 4. U. S. National Advisory Committee for Aeronautics 5. NACA 890.

INVESTIGATIONS RELATING TO THE EXTENSION OF LAMINAR FLOW BY MEANS OF BOUNDARY-LAYER SUCTION THROUGH SLOTS, by Laurence K. Loftin, Jr., and Dale L. Burrows. U. S. Langley Aeronautical Laboratory, Langley Air Force Base, Va. Oct 1949. 58p drawings, graphs Mi $2.75 Ph $7.50. PB 99094

Wind-tunnel investigations have been made of suction through slots as a means of increasing the extent of laminar flow on several airfoil sections. A method is presented for determining an efficient suction slot arrangement for any arbitrary airfoil section operating at a given free-stream Reynolds number. NACA TN 1961.

LONGITUDINAL FLYING QUALITIES OF SEVERAL SINGLE-ROTOR HELICOPTERS IN FORWARD FLIGHT, by F. B. Gustafson, Kenneth D. Amer, C. R. Haig, and J. P. Reeder. U. S. Langley Aeronautical Laboratory, Langley Field, Va. Nov 1949. 20p photos, drawings, graphs Mi $1.75 Ph $2.50. PB 99329

Results of flight-test measurements and corresponding pilot's opinions of the forward-flight longitudinal flying-qualities characteristics of several single-rotor helicopters are compared and analyzed. The factors which appear most significant in relation to the pilot's appreciation of flying qualities are pointed out and a tentative wording for requirements covering these factors is suggested. NACA TN 1983.

ON INTERNAL DAMPING OF ROTATING BEAMS, by Morris Morduchow. Polytechnic Institute of Brooklyn. Dec 1949. 14p graphs Mi $1.75 Ph $2.50. PB 99521

An internal damping force per unit length of a beam performing harmonic motion in bending is assumed to exist and to be inversely proportional to the vibration frequency and directly proportional to the time rate of change of the elastic load. The internal logarithmic decrements are discussed for a beam rotating about a transverse axis and vibrating in a direction normal to the plane of rotation and also for the beam vibrating in the plane of rotation. NACA TN 1996.

ON THE THEORY OF OSCILLATING AIRFOILS OF FINITE SPAN IN SUBSONIC COMPRESSIBLE FLOW, by Eric Reissner. Massachusetts Institute of Technology, Cambridge, Mass. Sep 1949. 37p Mi $2.25 Ph $5.00. PB 98907

The problem of the oscillating lifting surface of finite span in subsonic compressible flow is reduced to an integral equation, which is approximated by a simpler expression, on the basis of the assumption of sufficiently large aspect ratio. The double integral occurring in the formulation of the problem is reduced to two single integrals. By this reduction the three-dimensional problem appears separated into two-dimensional problems. NACA TN 1953.

PROFILE DRAG MEASUREMENTS AT COMPRESSIBILITY SPEEDS ON AEROFOILS WITH AND WITHOUT SPANWISE WIRES OR GROOVES BY H. H. PEARCEY. NOTE ON REYNOLDS AND MACH NUMBER EFFECTS ON THE PRESSURE DISTRIBUTION ON THE TAIL OF EC 1250, by J. A. Beavan. Gt. Brit. Ministry of Supply. Aeronautical Research Council. 1949. 21p diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.30. PB 99552

Further tests on a 1-ft. chord model of EC 1250 showed that, with this larger chord, compressibility effects at the wires are of less importance and hence that wires are more suitable for fixing transition. ARC TR 7067.

RESPONSE OF AN AEROPLANE TO THE APPLICATION OF AILERONS AND RUDDERS. PART II. RESPONSE IN YAW AND SIDESLIP, by R. W. Gandy. Gt. Brit. Ministry of Supply. Aeronautical Research Council. 1949. 37p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $2.05. PB 99553

This report completes an examination of the lateral response of an aeroplane to the application of a given rolling couple or yawing couple. The curves of the present report covers the corresponding motion in sideslip and yaw, during the first five units of aerodynamic time. The investigation is made for two separate incidences, corresponding to a relatively high forward speed and a low speed respectively. ARC RM 2272. ARC TR 8963.

SEMIEMPIRICAL METHOD FOR ESTIMATING THE ROLLING MOMENT DUE TO YAWING OF AIRPLANES by John P. Campbell and Alex Goodman. U. S. Langley Aeronautical Laboratory, Langley Field, Va. Dec 1949. 30p drawings, graphs, tables Mi $2.00 Ph $3.75. PB 99563

A method is presented for estimating the rolling moment due to yawing as expressed by the derivative $C_{l_r}$. In this method the theory is modified by experimentally determined correction factors that are obtained from static lateral-stability force-test data. NACA TN 1984.

SUMMARY OF LATERAL-CONTROL RESEARCH BY LANGLEY RESEARCH STAFF, COMPILED by Thomas A. Toll. U. S. Langley Aeronautical Laboratory, Langley Field, Va. 1947. 79p Available from U. S. Government Printing Office, Washington 25, D. C. $.45. PB 99103

A discussion is given of the criterions used in lateral-control specifications, of the factors involved in obtaining satisfactory lateral control, and of the methods employed in making lateral-control investigations in flight and in wind tunnels. The available data on conventional flap-type ailerons having various types of aerodynamic balance are presented in a form convenient for use in design. NACA 868.

THEORETICAL DISCUSSION OF HIGH-LIFT AEROFOILS WITH LEADING-EDGE POROUS SUCTION, by B. Thwaites. Gt. Brit. Ministry of Supply. Aeronautical Research Council. 1949. 9p graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.70. PB 99551

It is shown that by the principle of porous suction high lift coefficient can be obtained on thin aerofoils by the use of surprisingly small amounts of suction. The discussion is restricted to aerofoils with rounded leading edges. There are given graphs showing estimates of the quantities of air to be sucked on three different typical thin sections to produce any reasonable desired lift coefficient. ARC RM 2242. ARC TR 9809.

THEORETICAL LOADING AT SUPERSONIC SPEEDS OF FLAT SWEPT-BACK WINGS WITH INTERACTING TRAILING AND LEADING EDGES, by Doris Cohen. U. S. Ames Aeronautical Laboratory, Moffett Field, Calif. Dec 1949. 55p drawings, graphs Mi $2.75 Ph $7.50. PB 99578

By the methods of superposition of conical flows, the load distribution is calculated for regions of a long swept-back wing behind the points at which the Mach lines from the trailing-edge apex intersect the leading edge. It is found that a good approximation to the load can be obtained by the application of a fairly simple correction factor to the two-dimensional subsonic distribution. The similarity to two-dimensional flow is used to derive expressions for the loss of lift behind the Mach lines from the tips of the wing. NACA TN 1991.

THEORETICAL SPANWISE LIFT DISTRIBUTIONS OF LOW-ASPECT-RATIO WINGS AT SPEEDS BELOW AND ABOVE THE SPEED OF SOUND, by Franklin W. Diederich and Martin Zlotnick. U. S. Langley Aeronautical Laboratory, Langley Field, Va. Oct 1944. 21p diagrs, graphs, tables Mi $2.00 Ph $3.75. PB 99088

The spanwise lift distributions of wings of low aspect ratio but of arbitrary plan form and angle-of-attack distribution have been analyzed by two well-established concepts: the virtual-mass concept and the Weissinger method. Lift distributions are calculated for several angle-of-attack distributions. For plan forms with leading edges swept back far behind the Mach cone, the results of the analysis are applicable at supersonic speeds. NACA TN 1973.

VELOCITY DISTRIBUTIONS ON TWO-DIMENSIONAL WING-DUCT INLETS BY CONFORMAL MAPPING, by W. Perl and H. E. Moses. U. S. Aircraft Engine Research Laboratory, Cleveland, Ohio. 1948. 17p drawings, graphs, tables Available from Supt. of Documents, U. S. Gov't Printing Office, Washington 25, D.C. $.15. PB 99303

1. Ducts, Radiator 2. Velocity - Measurements 3. Conformal transformation 4. NACA 893.

## Engines and Propellers

AIRCRAFT ENGINE LUBRICATION SYSTEM DEAERATOR INVESTIGATION, by D. J. Gildea and P. H. Schweitzer. Pennsylvania State College. Engineering Experiment Station, State College, Pa. Feb 1949. 134p photos, drawings, diagrs, graphs Mi $5.50 Ph $17.50. PB 99483

Report represents an extended investigation of oil system deaerators for use on reciprocating aircraft engines, and of the design parameters involved. A variety of

deaerators were investigated, the designs being limited to those that require no outside source of power. USAF Contract no. W-33-038-ac-11431. AAF TR 5764. AAF TSEPP 534-115.

ANALYSIS OF THE EFFECT OF BASIC DESIGN VARIABLES ON SUBSONIC AXIAL-FLOW-COMPRESSOR PERFORMANCE, by John T. Sinnette, Jr. U. S. Flight Propulsion Research Laboratory, Cleveland, Ohio. 1948. 25p diagrs, graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.20. PB 99838

A graphical method that is useful for approximate design calculations is presented. The relations among several efficiencies useful in compressor design are derived and discussed. The possible gains in useful operating range obtainable by the use of adjustable stator blades are discussed and a rapid approximate method of calculating blade angle resettings is shown by an example. NACA 901.

BIBLIOGRAPHY ON AIRCRAFT IGNITION, BY PAUL T. NUMS. REVISED. Dec 1947. 28p Mi $2.00 Ph $3.75. PB 99853

1. Ignition systems - Bibliography 2. Magnetos - Bibliography 3. Spark plugs - Bibliography 4. Radio interference - Bibliography.

Original edition Sept 1947.

CERAMIC COATINGS AND CERAMIC BODIES FOR AIRCRAFT POWER SYSTEMS, by Dwight G. Bennett. Illinois. University. Dept. of Ceramic Engineering, Urbana, Ill. Feb 1948. 119p photos, drawings, graphs, tables Mi $4.75 Ph $15.00. PB 89979

1. Engines, Aircraft - Coatings 2. Coatings, Ceramic 3. IU DCE 24.

Contract W-33-038-ac-14520 (16071).

CRANKING TORQUE REQUIREMENTS FOR ENGINES OF LESS THAN 1000 CU. IN. DISPLACEMENT, by J. T. Murphy. U. S. Naval Air Material Center. Aeronautical Engine Laboratory, Philadelphia, Pa. Jul 1945-Feb 1948. Apr 1948. 10p graphs Mi $1.25 Ph $1.25. PB 99508

A determination of the cranking torque characteristics at various cranking speeds and temperatures for four types of aircooled engines, each of less than 1000 cu in. displacement, was made. It was found that the cranking torque is independent of crankshaft speed at temperatures of approximately 70°F. Cranking torque increases rapidly with decreasing temperature for a given cranking speed. NAV AEL 1016.

EXPERIMENTAL INVESTIGATION OF FLUTTER OF A PROPELLER WITH CLARK Y SECTION OPERATING AT ZERO FORWARD VELOCITY AT POSITIVE AND NEGATIVE BLADE-ANGLE SETTINGS, by John E. Baker and Russell S. Paulnock. U. S. Langley Aeronautical Laboratory, Langley Field, Va. Dec 1949. 13p drawings, graphs, table Mi $1.75 Ph $2.50. PB 99854

An investigation was made of the flutter of a small one-blade wooden propeller having a Clark Y airfoil section. The flutter speed and flutter frequency were obtained with the propeller operating at zero forward velocity at blade-angle settings, measured at 0.8 radius, from about 25° to -25° and at pressures from 0.321 to 1.0 atmosphere. NACA TN 1966.

ICING-PROTECTION REQUIREMENTS FOR RECIPROCATING-ENGINE INDUCTION SYSTEMS, by Willard D. Coles, Vern G. Rollin, and Donald R. Mulholland. U. S. Lewis Flight Propulsion Laboratory, Cleveland, Ohio. Dec 1949. 61p photos, drawings, graphs Mi $3.00 Ph $8.75. PB 99626

A comprehensive investigation was made regarding all phases of induction-system icing in reciprocating engines for light and heavy aircraft and characteristics of impact, throttling, and fuel-evaporation ice were studied. Data were obtained from laboratory investigations of several carburetor-supercharger combinations, wind-tunnel investigations of air scoops, multicylinder-engine studies, and flight studies. Effects of many factors on icing characteristics studied included effects of atmospheric conditions, engine and air-scoop configurations, type of fuel used, power condition, mixture setting, use of carburetor heat, and water-alcohol injection. Recommendations are given for design and operation with regard to induction-system icing. NACA TN 1993.

KNOCKING COMBUSTION OBSERVED IN A SPARK-IGNITION ENGINE WITH SIMULTANEOUS DIRECT AND SCHLIEREN HIGH-SPEED MOTION PICTURES AND PRESSURE RECORDS, by Gordon E. Osterstrom. U. S. Flight Propulsion Research Laboratory, Cleveland, Ohio. 1948. 24p photos, drawings, graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.20. PB 99836

The first stages of the autoignition process as seen in the schlieren photographs emitted insufficient light to be photographed directly. NACA 897.

LABORATORY TESTS ON THE CLOSED-CIRCUIT AIRCRAFT ENGINE LUBRICATING SYSTEM, by R. B. Keusch. U. S. Air Materiel Command. Engineering Division. Power plant Laboratory, Wright Field, Dayton, Ohio. Jan 1949. 6p drawing, table Mi $1.25 Ph $1.25. PB 99481

Data from dynamometer laboratory tests of the closed-circuit aircraft engine lubrication system are presented. The closed-circuit system consists of a deaerator located in the scavenge pump outlet, a tubular air-cooled oil cooler, an "educator" or aspirating valve, and a return line to the pressure pump inlet. The purpose of the educator is to return fluid to the oil tank when fluid is added to the closed system, and to pull oil out of the tank when the closed system is depleted due either to a leak or normal usage. The function of the deaerator is to take air out of the oil as it passes through, the air and oil drag returning to the vented space of the oil tank through an appropriate restriction. AAF TSEPP 534-132.

THEORETICAL ANALYSIS OF ELASTIC VIBRATIONS OF FIXED-ENDED AND HINGED HELICOPTER BLADES IN HOVERING AND VERTICAL FLIGHT, by Morris Morduchow. Polytechnic Institute of Brooklyn, Brooklyn, N. Y. Jan 1950. 61p diagrs, graphs Mi $3.00 Ph $8.75. PB 99879

A theoretical analysis is given of the frequency and damping characteristics of free modes of vibration of balanced fixed-ended and hinged elastic helicopter blades in hovering and vertical flight. Torsional vibrations, bending vibrations in flapping and in lagging, and coupling between flapping and lagging motions are considered. Methods for calculation of natural frequencies and logarithmic decrements of principal modes are developed. Flutter, is briefly considered and simple criterions are derived for stability of coupled torsional and flapping vibrations in such cases. NACA TN 1999.

TRANSIENT BEHAVIOR OF LUMPED-CONSTANT SYSTEMS FOR SENSING GAS PRESSURES, by Gene J. Delio, Glennon V. Schwent, and Richard S. Cesaro. U. S. Lewis Flight Propulsion Laboratory, Cleveland, Ohio. Dec 1949. 32p drawings, graphs Mi $2.75 Ph $5.00. PB 99575

Theoretical equations describing the behavior of a lumped-constant pressure-sensing system under transient operation are developed and presented with experimental data that show agreement with the equations. Design parameters are presented that can be adjusted to achieve a desired performance from such a system when the system is considered as a transfer member of a control loop. NACA TN 1988.

## Instruments

COMPARISON OF WING LOADS MEASURED IN FLIGHT ON A FIGHTER-TYPE AIRPLANE BY STRAIN-GAGE AND PRESSURE-DISTRIBUTION METHODS, by William S. Aiken, Jr., and Donald A. Howard. U. S. Langley Aeronautical Laboratory, Langley Field, Va. Nov 1949. 27p drawings, graphs, table Mi $2.00 Ph $3.75. PB 99524

Flight-test results of pressure-distribution measurements of the span loading on a wing of a fighter-type airplane are presented and compared with strain-gage results and wind-tunnel tests. Some data obtained during stalls and buffeting are given. NACA TN 1967.

INVESTIGATION OF A NACA HIGH-SPEED STRAIN-GAGE TORQUEMETER, by John J. Rebeske, Jr. U. S. Lewis Flight Propulsion Laboratory, Cleveland, Ohio. Jan 1950. 31p photos, graphs Mi $2.25 Ph $5.00. PB 99825

A strain-gage torquemeter was designed, built, and operated over a range of shaft speeds from 5000 to 17,000 rpm and torque loads from 250 to 5500 inch-pounds. The precision and the accuracy of the instrument were determined by static calibration and dynamic operation. The practicability of the instrument is discussed. Methods for overcoming the effects of operating variables, such as torsion-shaft temperature and slip-ring contact resistance, are presented. NACA TN 2003.

INVESTIGATION OF THE STABILITY OF A SYSTEM COMPOSED OF A SUBSONIC CANARD AIRFRAME AND A CANTED-AXIS GYROSCOPE AUTOMATIC PILOT, by Robert A. Gardiner, Jacob Zarovsky, and H. O. Ankenbruck. U. S. Langley Aeronautical Laboratory, Langley Field, Va. Jan 1950. 48p photos, drawings, graphs, tables Mi $2.50 Ph $6.50. PB 99827

The analysis was based on calculations of the airframe frequency response and measurements of the autopilot frequency response. The results of the analysis are presented as calculated system transient responses to suddenly applied disturbances. NACA TN 2004.

SPEED AND ACCURACY OF READINGS AS A FUNCTION OF DESIGN IN THE SENSITIVE AIRSPEED INDICATOR, by George E. Long. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Aug 1949. 16p diagrs, tables Mi $1.75 Ph $2.50. PB 99642

Research reported here was designed to provide information as to the best method of designing a sensitive airspeed indicator that could be read accurately, to within 1 mph, and as rapidly as possible. AAF TR 5836.

## Airports and Airways

AIRFIELD DRAINAGE STRUCTURE INVESTIGATION, BY HARVEY J. JOHNSON AND GORDON F. HAUERWAS. FINAL REPORT. Apr 1949. 144p photos, drawings, graphs, tables Mi $5.75 Ph $18.75. PB 98333

This report covers an investigation of hydraulic characteristics of airfield gutters, inlet gratings and slots, and curb inlets. The tests were conducted to determine the hydraulic characteristics of the gutter in terms of known formulas for uniform flow and then for non-uniform flow produced by the inflow to the gutter of run-off from the adjoining pavement. Hydraulic Laboratory Report no. 54.

## Aerodynamics

AERODYNAMIC CHARACTERISTICS OF DAMPING SCREENS, by G. B. Schubauer, W. G. Spangenberg, and P. S. Klebanoff. U. S. National Bureau of Standards. Jan 1950. 39p drawings, graphs, tables Mi $2.25 Ph $5.00. PB 99644

Data on normal- and tangential-force coefficients are given for a variety of square-mesh screens. Damping theories are reviewed and performance is compared with theory. Characteristics investigated include damping of longitudinal and lateral components of turbulence, effect of screens on scale, conditions for production of turbulence and eddies by screens, and damping of spatial variations of mean speed. NACA TN 2001.

INTERFERENCE METHOD FOR OBTAINING THE POTENTIAL FLOW PAST AN ARBITRARY CASCADE OF AIRFOILS, by S. Katzoff, Robert S. Finn, and James C. Laurence. U. S. Langley Aeronautical Laboratory, Langley Field, Va. 1947. 22p graphs, tables Available from Supt. Doc., U. S. Gov't Printing Office, Washington 25, D. C. $.15. PB 99520

The method considers directly the influence on a given airfoil of the rest of the cascade and evaluates this interference by an iterative process, which appeared to converge rapidly in the cases tried. Two variations of the basic interference calculations are described. NACA 879.

INVESTIGATION OF THE EFFECT OF BOUNDARY LAYER SUCTION ON THE AIR RESISTANCE IN CHANNEL ELBOWS, by Hans Olof Palmo. Sweden. Kungl. Tekniska Högskolan. Institutionen för Flygteknik. 1948. 86p photos, diagrs, graphs Mi $3.75 Ph $11.25. PB 99452

The investigation has embrased an experimental part and a part consisting of theoretical computations. The experimental part has comprised quantitative tests for comparison with the calculations, qualitative tests to throw light on certain important problems of fluid flow, and finally systematic quantitative tests to determine the influence of certain parameters. The theoretical part has included calculation of the pressure distribution along the walls of curved channels and on the basis of this together with experimental pressure distributions, calculation of the thickness of the boundry layer and the point of separation. KTH aere TN$^2$.

NOTE ON THE POSITION OF THE AERODYNAMIC CENTER OF POINTED WINGS AT SUBSONIC SPEEDS, by S. B. Berndt. Sweden. Kungl. Tekniska Högskolan. Institutionen för Flygteknik. Jun 1948. 6p graphs Mi $1.25 Ph $1.25. PB 99455

A simple method is suggested for the design of wings whose aerodynamic center is independent of a variation of the lateral dimensions of the wing. The method is

applied to tapered wings, and good agreement is found with tests on wings with straight trailing edges, and a taper ratio of 0,303. According to Prandtl-Glauert's rule the position of the aerodynamic center for the wings in consideration is independent of the Mach number at subsonic speeds. KTH aere TN[5].

NOTE ON TWO DIMENSIONAL SUPERSONIC TUNNEL INTERFERENCE, by W. F. Hilton. Gt. Brit. Ministry of Supply. Aeronautical Research Council. 1949. 6p graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.10. PB 99557

For the purpose of two-dimensional supersonic wind-tunnel experiments, provided certain conditions are satisfied, a rigid proof is advanced that no wall-interference effects on the model will be experienced when the flow along the wall is superonic at all points. A tentative proof of the converse is offered. A limited amount of experimental verification is given. ARC RM 2332. ARC TR 7307.

ON SIMILARITY RULES FOR TRANSONIC FLOWS, by Carl Kaplan. U. S. Langley Aeronautical Laboratory, Langley Field, Va. 1948. 9p tables Available from Supt. of Docs., U. S. Gov't Printing Office, Washington 25, D.C. $.10. PB 99522

A method used ty Tsien to derive similarity rules for hypersonic flows is utilized to derive Von Kármán's similarity rules for transonic flows. A slight generalization is introduced by the inclusion of $\gamma$, the ratio of specific heats, as a parameter. NACA 894.

ON THE BEHAVIOUR OF DRY AIR IN A SUPERSONIC WIND TUNNEL, by S. Goldstein. Gt. Brit. Aeronautical Research Council. 1949. 11p graph, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.90. PB 99535

To allay doubts of the validity of the assumption in calculations relating to a supersonic wind tunnel that air can be treated as a perfect gas, with a constant value 1.4 for the ratio of the specific heats Cp and Cv. ARC RM 2337.

PRELIMINARY MEASUREMENTS OF THE BOUNDARY LAYER IN THE 11-IN. SUPERSONIC WIND TUNNEL, by W. F. Cope and G. G. Watson. Gt. Brit. Ministry of Supply. Aeronautical Research Council. 1949. 7p graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N.Y. $.20. PB 99554

The velocity and Mach number distributions in the boundary layer of the National Physical Laboratory 11 in. Supersonic Wind Tunnel have been measured at Mach numbers of 1.5 and 2.4. The Reynolds number, based on the distance from the throat as representative length, was varied from 2 1/4 million to 7 1/4 million. The results show that the boundary layer is supersonic to within a very short distance of the wall and that the representation of the distribution by either a logarithm or a power law becomes less accurate as the Mach number increases. ARC RM 2304. ARC TR 10058.

TWO-DIMENSIONAL POTENTIAL FLOWS, by Manfred Schäfer and W. Tollmien. Nov 1949. 24p tables Mi $2.00 Ph $3.75. PB 99526

The characteristic differential equations are set up for two-dimensional potential flows. The methods of 0. Walchner and of Prandtl and Busemann are discussed. Busemann's development of the pressure variation for small deflection angles is given and applied to the example of a circular arc profile. Tables are provided

giving the relation between deflection angle, pressure, velocity, Mach number and Mach angle for isentropic changes of state for air. Translation of Ebene potential-stromungen, from Technische Hochschule, Dresden. Archiv nr. 44/3, kapitel III, Mar 22, 1941. NACA TN 1243.

UNDERSÖKNING AV TURBULENSENS INVERKAN PÅ EMSLAGSPUNKTENS LÄGE PA ENVINGPROFIL (INVESTIGATION OF THE INFLUENCE OF TURBULENCE ON THE TRANSITION POINT ON AN AIRFOIL) avG. Drougge. Flygtekniska Försöksanstalten FFA, Stockholm. 1946. 24p diagrs, graphs, tables (Text in Swedish) Mi $2.00 Ph $3.75. PB 99504

An investigation is presented which deals with the transition from laminar to turbulent flow in a boundary layer of an airfoil. If it is assumed that transition implies transient laminar separation, it may be expected that transition in the boundary layer in a turbulent air stream will occur when fluctuating pressure gradients have a sufficiently high and positive value. It is suggested that the magnitude of this value in a point of an airfoil may be equal to the difference between the value of the gradient in this point, which had been necessary to cause laminar separation, and the value of the gradient in the same point of existing pressure distribution. FFA rapport AE24:4. Meddelande nr. 20.

## Land Transportation

BERICHT ÜBER DIE KONSTRUKTIVE ENTWICKLUNG UND DIE ERFAHRUNGEN DER FIRMA HENSCHEL & SOHN, KASSEL, BEIM BAU UND BETRIEB VON DAMPFOMNIBUSSEN, DAMPFLASTWAGEN UND DAMPF TRIEBWAGEN (REPORT ON BUILDING AND OPERATION OF STEAM PROPELLED TRAM-CARS, LORRIES, AND RAIL-CARS BY HENSCHEL & SON, KASSEL). Henschel & Sohn G.m.b.H., Kassel, Ger. Nov 1946. 28f photos, drawings (Text in German) Mi $2.00 Enl Pr $5.00. PB 99803

1. Vehicles, Steam driven - Germany 2. Micro BIOS Docs 2651/2046/15 3. Micro BIOS 2651/2046/15 4. Micro BIOS FD 1001/48, Frames 1-18, 34-43.

# MISCELLANEOUS

AIRCRAFT FLARE MK.VI, MOD. 1 AND MOD. 5. AUXILIARY PARACHUTE. U. S. Naval Ordnance Plant, Baldwin, Long Island, N. Y. Feb 1940. 8p drawing only Mi $1.25 Ph $1.25. PB 99676

1. Flares, Aircraft - Design 2. Flares, Aircraft - Parachutes, Auxiliary 3. MK. VI, mod. 1 (Aircraft flare) 4. MK.VI, mod. 5 (Aircraft flare).

Drawing no. 115086. See also PB 99674-PB 99675, PB 99677-PB 99679.

AIRCRAFT FLARE MK.VI, MOD. 1 AND MOD. 5. FLARE CASING AND CASING AND SUPPORT BAND. U. S. Naval Ordnance Plant, Baldwin, Long Island, N. Y. Feb 1940. 2p drawing only Mi $1.25 Ph $1.25. PB 99678

1. Flares, Aircraft - Design 2. Flares, Aircraft - Casings 3. Flares, Aircraft - Support bands 4. MK.VI, mod. 1 (Aircraft flare) 5. MK.VI, mod. 5 (Aircraft flare)

Drawing no. 115081. See also PB 99674-PB 99677, PB 99679. This report may not reproduce well.

AIRCRAFT FLARE MK.VI, MOD. 1 AND MOD. 5. FUSE MECHANISM ASSEMBLY AND HOUSING DETAILS. U. S. Naval Ordnance Plant, Baldwin, Long Island, N. Y. Feb 1940. 2p drawing only Mi $1.25 Ph $1.25. PB 99679
1. Flares, Aircraft - Design 2. Flares, Aircraft - Fuses 3. Flares, Aircraft - Fuses - Housings 4. MK.VI, mod. 1 (Aircraft flare) 5. MK.VI. mod. 5 (Aircraft flare).
Drawing no. 115079. See also PB 99674-PB 99678. This report will not reproduce well.

AIRCRAFT FLARE MK.VI, MOD. 5. FUSE MECHANISM DETAILS. U. S. Naval Ordnance Plant, Baldwin, Long Island, N. Y. Feb 1940. 9p drawing only Mi $1.25 Ph $1.25. PB 99675
1. Flares, Aircraft - Design 2. Flares, Aircraft - Fuses 3. MK.VI mod. 5 (Aircraft flare).
Drawing no. 115078. See also PB 99674, PB 99676-PB 99679. This report may not reproduce well.

AIRCRAFT FLARE MK. VI, MOD. 1 AND MOD. 5. ILLUMINANT CONTAINER. U.S. Naval Ordnance Plant, Baldwin, Long Island, N. Y. Feb 1940. 8p drawing only Mi $1.25 Ph $1.25. PB 99674
1. Flares, Aircraft - Illuminant containers 2. Flares, Aircraft - Design 3. MK.VI mod. 1 (Aircraft flare) 4. MK. VI, mod. 5 (Aircraft flare).
Drawing no. 115082. See also PB 99675-PB 99679.

AIRCRAFT FLARE MK.VI, MOD. 1 AND MOD. 5. PARACHUTE DETAILS. U. S. Naval Ordnance Plant, Baldwin, Long Island, N. Y. Feb 1944. 8p drawing only Mi $1.25 Ph $1.25. PB 99677
1. Flares, Aircraft - Design 2. Flares, Aircraft - Parachutes 3. MK. VI, mod. 1 (Aircraft flare) 4. MK. VI, mod. 5 (Aircraft flare).
Drawing no. 115085. See also PB 99674-PB 99676, PB 99678-PB 99679.

AUTOMATIC AND MANUAL FIRE ALARM SYSTEMS. INSPECTION, TESTS, AND MAINTENANCE. U. S. War Dept. Aug 1946. 69p photos, drawings Mi $3.00 Ph $8.75. PB 99332
1. Fire alarms 2. WD TM 5-696.

BESPRECHUNG ÜBER HARTMETALLZIEHSTEINE MIT HERRN DR. HINNÜBER AM 24.11.32. SCHICHT- UND KERNSTEINE. INVESTIGATIONS ON POROSITY OF DYES SENT TO US BY KRUPP. ERSATZ DES ELIVENÖLE DURCH GLYSERIN. DIAMANTPULVER. (CONVERSATION WITH DR. HINNÜBER ON HARD METAL WIRE-DRAWING DIES. BEDROCK AND COCCOLITH. INVESTIGATIONS ON POROSITY OF DYES SENT TO US BY KRUPP. GLYCERINE SUBSTITUTES FOR OLIVE OIL. DIAMOND POWDER). Studiengesellschaft Hartmetall, Berlin. Nov 1932-Mar 1936. 40f photos, drawing (Text in German) Mi $2.25 Enl Pr $6.25. PB 96588
1. Wire - Drawing - Germany 2. Coccolith - Germany 3. Dyes and dyeing - Porosity - Germany 4. Olive oil - Substitutes - Germa y 5. Diamond powders - Manufacture - Germany 6. Micro BIOS HEC 11018 7. Micro BIOS HEC 11028 8. Micro BIOS HEC 11035 9. Micro BIOS HEC 11054 10. Micro BIOS HEC 11061 11. Micro BIOS FD 3754/47, Frames 1-39.
Micro BIOS HEC 11035 in German and English.

BIBLIOGRAPHY OF SELECTED REFERENCES ON NOMOGRAPHIC OR ALIGNMENT CHARTS, PREPARED by Francis D. Horigan and Cary R. Sage. U. S. Office of the Quartermaster General. Military Planning Division. Research and Development Laboratories. Technical Library. Nov 1949. 24p Mi $2.00 Ph $3.75 Mimeo: $.75. PB 99625

A Compilation of 242 references covering the relevant fields of technology, chemistry and engineering to which the nomograph may be applied. The study covers the years 1940 to November, 1949. QMC TL BS 7.

OXYACETYLENE TORCH, MODERN APPLICATIONS OF. U. S. Bureau of Ships. Jan 1948. 12p photos, drawings Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 99771

1. Torches, Oxyacetylene 2. NAVSHIPS IN 74 3. NAVSHIPS 250-740.

PEARL CULTURE IN JAPAN, by Dr. A. R. Cahn. Supreme Commander for the Allied Powers. Natural Resource Section. Oct 1949. 94p drawings, maps, tables Mi $4.25 Ph $12.50. PB 99398

1. Pearl industry - Japan 2. SCAP NRS 122.

REPAIR INSTRUCTIONS, ELECTRONIC ORGAN AN/TN P1. U. S. Army. Oct 1949. 96p photos, drawings Mi $4.25 Ph $12.50. PB 99333

1. AN/TN P-1 (Electronic organ) 2. Organs - Maintenance and repair 3. WD TM 11-4703.

RESEARCH TOWARD BREAKING UP OF ICE JAMS, by P. F. Dantone. U. S. Engineer Board. Jul 1946. 64p photos, diagrs, maps Mi $3.00 Ph $8.75. PB 99511

This report covers an investigation of the removal of ice jams on the Missouri River by explosives, and an evaluation of equipment that may be used for this purpose. WD 984.

REVIEW OF CURRENT RESEARCH AND DIRECTORY OF MEMBER INSTITUTIONS. American Society for Engineering Education. Engineering College Research Council. 1949. 192p Available from Engineering College Research Council, Attention Mr. John P. Weber, Assistant Secretary, College of Engineering, State University of Iowa, Iowa City, Iowa. $1.75. PB 99570

1. Engineering - Education 2. Engineering - Research.

WATER FOG AT HIGH AND LOW PRESSURES. U. S. Army. Corps of Engineers. Engineer Research and Development Laboratories. Apr 1949. 18p photos, graphs, tables Mi $1.75 Ph $2.50. PB 99469

This report covers tests conducted by the Engineer Research and Development Laboratories to determine the relative merits of water fog applied at high and low pressures in the extinguishment of fires involving inflammable liquids and ordinary combustible materials. ERDL R 1096.

WIND TUNNEL TESTS ON CLUSTERS OF PARACHUTES, by E. I. Auterson. Gt. Brit. Ministry of Supply. Aeronautical Research Council. 1949. 8p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.70. PB 99555

An investigation has been made into the effect of the mutual interference of the parachutes in a cluster on its drag, opening speed and stability. The effect of "crowding" the parachutes is to decrease drag and opening speeds and to increase the stability of the cluster. When strops are used to prevent crowding of the canapies, the mutual interference of the parachutes on drag and opening speed is very much reduced. The usual effects of porosity on opening speeds and stability are more pronounced in a cluster than for a single parachute. ARC RM 2322.

## PATENTS

### Chemicals and Allied Products

LABORATORY DIARIES, NOTES, DRAFTS OF PATENT APPLICATIONS, ETC. RELATING TO THE FIRM'S CATALYST LABORATORY. I. G. Farbenindustrie A. G., Frankfort, Ger. 1935-1945. 600f (Text in German) Mi $9.00 Enl Pr $78.75. PB 99466

1. Catalysts - Research - Germany 2. Chemical coupounds, Inorganic - Patents - Germany 3. Acids, Dicarboxylic - Preparation - Germany 4. Isobutyraldehyde - Preparation - Germany 5. Nitro, urethane - Preparation - Germany 6. Micro BIOS FD 1531/48, Frames 1-600.

Abstract in English.

PATENT APPLICATIONS AND REPORTS RELATING TO THE PRODUCTION OF TITANIUM DIOXIDE, TITANIUM TETRACHLORIDE, HIGH GRADE IRON FROM ILMENITE ETC. Titangesellschaft m.b.H., Leverkusen, Ger. 1937-1943. 58f (Text in German) Mi $2.75 Enl Pr $8.75. PB 99813

1. Titanium dioxide - Production - Patents - Germany 2. Titanium tetrachloride - Production - Patents - Germany 3. Illenite - Iron content - Patents - Germany 4. Titanium - Iron content - Patents - Germany 5. Iron ores - Titanium content - Patents - Germany 6. Patents - Germany - T 48568 IVb/12i, Feb 1937 7. Patents - Germany - I 67176 IVb/12i (39) I. G. no. 315, Jul 1940 8. Patents - Germany - T513312 IVc/39b, Mar 1943 9. I. G. Farbenindustrie A. G., Leverkusen, Ger. 10. Micro BIOS FD 1414/49, Frames 1-43.

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1. Ethers - Preparation - Patents - Germany 2. Alcohols - Preparation - Patents - Germany 3. Patents - Germany OZ 12163 4. Patents - Germany OZ 12187 5. Patents - Germany OZ 14822 6. Patents - Germany OZ 14864 7. Micro BIOS FD 2386/48, Frames 1-11.

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A list of patent applications made by the I. G. Farbenindustrie is presented, giving the serial number, date of application, and title, for each month from November 1941 through August 1944. Applications cover almost any field of applied chemistry generally concerned with production methods and equipment for various purposes.

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1. Sulphuric chloride - Patents - Germany 2. Patents - Germany OZ 14232 3. Patents - Germany - OZ 14277 4. Patents - Germany - OZ 14377 5. Micro BIOS FD 2656/47, Frames 1-34.
Abstract in English.

VERFAHREN DARSTELLUNG VON POLYMERISATIONSPRODUKTEN DES TETRAHYDROFURANS. (PATENT APPLICATION RELATING TO THE PREPARATION OF TETRAHYDROFURANE POLYMERS). I. G. Farbenindustrie A. G., Leverkusen, Ger. 1943. 47f (Text in German and English) Mi $2.50 Enl Pr $7.50. PB 96595
1. Furan, Tetrahydro - Polymerization - Germany 2. Patents - Germany 3. Micro BIOS FD 2877/46, Item 55, Frames 1-26: 1-20.
Translation and abstract in English. Cognate specification for foreign applications based on Le 2457, 2520, 2521, 2918, 2942, 2979, 2980, 3727, 3728, 3729.

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1. Tetraethyl lead - Production - Patents - Germany 2. Fluorides - Patents - Germany 3. GP 675410 4. I. G. Farbenindustrie A. G., Frankfurt am Main, Ger. 5. NAVSHIPS T 327.

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1. Chemical compounds, Organic - Patents - Germany 2. Patents - Germany O.Z. 12449 Nov 23, 1940 3. Patents - Germany O.Z. 13366 Apr 2, 1942 4. Patents - Germany O.Z. 13596 Aug 8, 1942 5. Patents - Germany O.Z. 13597 Aug 10, 1942 6. Patents - Germany O.Z. 13610 Aug 18, 1942 7. Patents - Germany - O.Z. 13634 Aug 29, 1942 8. Patents - Germany O.Z. 13835 Dec 10, 1942 9. Micro BIOS FD 1300/49, Frames 1-40.

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CRANKING POWER REQUIREMENTS OF AN XJ30-WE-26 ENGINE, BY F. J. SAKSA. U. S. NAVAL AIR MATERIAL CENTER. AERONAUTICAL ENGINE LABORATORY. APRIL 15 TO JUL 1, 1947. Jul 1948. 50p graphs, tables Project TED No. NAM-BP-370. NAV AEL 1026. PB 99888

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